



October 29, 2007

Gunnison's Prairie Dog Comments  
U.S. Fish and Wildlife Service  
764 Horizon Drive, Building B  
Grand Junction, CO 81506-3946  
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VIA ELECTRONIC & CERTIFIED MAIL

**Re: Gunnison's prairie dog**

Dear Mr. Thompson,

On behalf of Forest Guardians and our members, Animal Defense League of Arizona, Animal Protection Institute, Biodiversity Conservation Alliance, Center for Biological Diversity, Center for Native Ecosystems, Grand Canyon Wildlands Council, Habitat Harmony Inc., the Humane Society of the United States, Jews of the Earth, People for Native Ecosystems, Prairie Dog Pals, Prairie Dog Specialists Inc., Prairie Ecosystems Associates, Prairie Preservation Alliance, Rocky Mountain Animal Defense, Sinapu, Southwest Public Employees for Environmental Responsibility, Utah Environmental Congress, Western Watersheds Project, Wildlands Conservation Alliance, and on behalf of the Gunnison's Prairie Dog, and in response to your August 28, 2007 Federal Register Notice (72 Fed. Reg. 49245-6), we submit these comments on the status of the Gunnison's prairie dog (*Cynomys gunnisoni*) (GPD).

We strongly advocate federal protection of this species under the Endangered Species Act (ESA). This species, and its two subspecies, clearly warrant listing, given that it has disappeared from 97% of its historic area and continues to face an onslaught of threats to its survival. As was determined by your own biologists, sylvatic plague is a significant threat to this species.

On the basis of plague alone, the GPD should be listed. In addition, habitat destruction, poisoning, shooting, and other threats further support the need for federal protection. In these comments, we focus on information not previously provided to the U.S. Fish and Wildlife Service (Service) in our previous petition and subsequent correspondence. However, we incorporate that information by reference.<sup>1</sup>

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<sup>1</sup>See Forest Guardians and 73 co-petitioners. 2004. Petition to the U.S. Fish and Wildlife Service to List the Gunnison's Prairie Dog as an Endangered or Threatened Species Under the Endangered Species Act. Submitted February 23, 2004 (Attachment 1); Forest

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### Taxonomic status of the Gunnison's prairie dog

As discussed in the 2004 petition, there are two recognized subspecies of the Gunnison's prairie dog: the *gunnisoni* and *zuniensis* subspecies. While we believe the entire species warrants listing, the *gunnisoni* subspecies is gravely imperiled. We therefore requested in October 2005 that the Service consider our 2004 petition a petition to list the entire species, as well as a petition to list each of the two subspecies.<sup>2</sup>

Genetic analysis has provided additional support for the taxonomic validity of the two GPD subspecies. Dr. David J. Hafner was asked by the Service to analyze whether the mtDNA phylogeography of the species was concordant with the existing subspecies taxonomy. In a summary of that research, Hafner et al. write: "Although subspecies recognition should not be based on mtDNA phylogeography, in this case the mtDNA phylogeography provides historical support for past geographic isolation and subsequent genetic differentiation of *C. g. gunnisoni* apart from *C. g. zuniensis*."<sup>3</sup>

The 12-month status review should consider both subspecies- and species-level listing. Indeed, the NatureServe status of the *gunnisoni* subspecies is G5T3, meaning that this subspecies is "vulnerable" and therefore at risk.<sup>4</sup>

### Distribution, population, and status of the Gunnison's prairie dog

The Gunnison's Prairie Dog Working Group has adopted a "Predictive Range Model" that relies on habitat modeling to evaluate threats to the species and its biological status rather than range-wide occupancy surveys. As we pointed out in comments on a 2005 draft of the working group plan, this fails to capture GPD occupied acreage, given that quality GPD habitat may be (and often is) unoccupied by the species due to plague or lethal control. See Attachment 4: Forest Guardians comments on 2005 draft interstate Gunnison's Prairie Dog Conservation Assessment. The New Mexico Natural Heritage Program, which is assisting New Mexico Department of Game and Fish in creating a

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Guardians email to Pete Gober, U.S. Fish and Wildlife Service, dated October 5, 2005 (Attachment 2); Forest Guardians et al. Notice of Intent to Sue the U.S. Fish and Wildlife Service regarding the February 7, 2006 90-day petition finding, dated August 17, 2006 (Attachment 3).

<sup>2</sup>See Attachment 2: Forest Guardians email to USFWS (2005).

<sup>3</sup>See Attachment 5: Hafner, David J., Brett R. Riddle, and Tereza Jezkova.

"Phylogeography of white-tailed prairie dogs, *Cynomys Gunnisoni*: Implications for subspecific recognition of *C. G. Gunnisoni*."

<sup>4</sup>See

<http://www.natureserve.org/explorer/servlet/NatureServe?searchSciOrCommonName=gunnison%27s+prairie+dog&x=0&y=0>.

GPD habitat model and survey maps for the state, points out that there is nothing more accurate than ground surveys (Kris Johnson, NMNHP, pers. comm.).<sup>5</sup>

Indeed, the severity of historic poisoning campaigns – which exterminated 48.7 million acres of prairie dogs from 1915-1964 across the four states in the range of the GPD<sup>6</sup> - have caused remaining prairie dogs to occupy only a small fraction of their historic range. According to figures in Table 1 of the February 2006 negative 90-day petition finding, GPDs now occur on only 3% of their former range, having dwindled from 24 million acres in 1916 to approximately 722,000 acres at present. See 71 Fed. Reg. 6241, 6244.

The number of occupied acres has long been the metric for analyzing population trends for this genus, and the four states within the GPD's range should embark on fully determining the extent of occupied acreage. In addition, there need to be assessments of actual population numbers and densities as discussed in Forest Guardians et al. (2007) at pp. 26-28. However, because the best available information clearly supports GPD listing, federal protection should not be further delayed.

#### *Arizona*

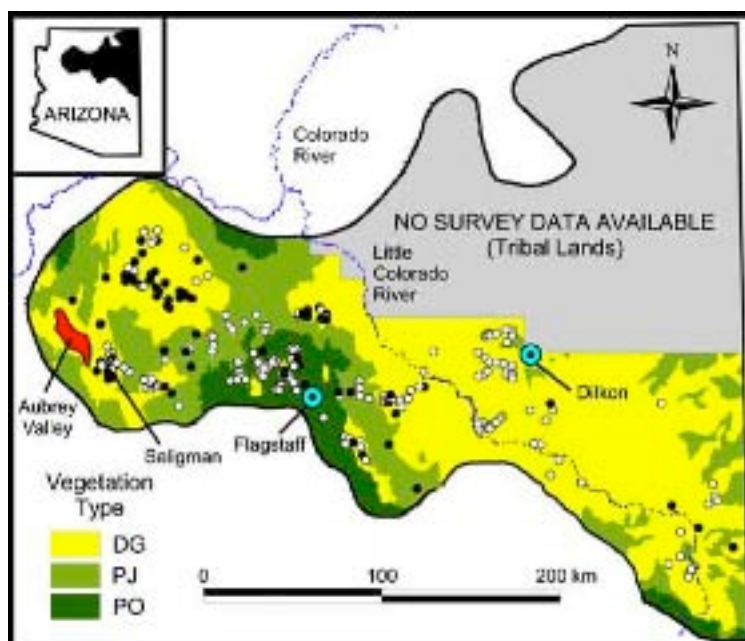
We described the decline in GPD occupied habitat in Forest Guardians (2004) at pp. 24-26. Seglund et al. (2006) reported an estimated 100,000 acres of GPDs remaining on non-tribal lands in Arizona, citing an undated personal communication from Bill van Pelt, which echoes the Forest Guardians et al. (2004) estimate. Seglund et al. (2006) describe this estimate as a ten-fold increase since mapping in 1961. However, they also acknowledge Wagner and Drickamer (2003), which indicated a significant decline in colony activity in Arizona, primarily due to plague epizootics (Seglund et al. 2006 at p. 16).

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<sup>5</sup>Developing cost-effective but accurate methods for surveying prairie dogs has been an ongoing challenge. Assal and Lockwood (2007) (Attachment 6) discuss the relative accuracy levels for use of satellite imagery and aerial surveys. While their study concerns black-tailed prairie dogs and does not directly translate to GPDs, given habitat differences, these authors note that sylvatic plague can confound survey results due to time lags between satellite image analysis and ground-truthing. The New Mexico Natural Heritage Program has pointed to a similar problem for GPDs (New Mexico Prairie Dog Working Group Minutes January 2006) (Attachment 7).

<sup>6</sup>In each of these states, multiple prairie dog species historically occurred: Arizona historically contained black-tailed and Gunnison's prairie dogs, but black-tails were extirpated by 1924 (Oakes 2000); Colorado contains black-tailed, Gunnison's, and white-tailed prairie dogs; New Mexico contains black-tailed and Gunnison's prairie dogs; and Utah contains Gunnison's, Utah, and white-tailed prairie dogs. Poisoning campaigns impacted all prairie dog species in the U.S. Poisoning figures for all the GPD states except Arizona combine prairie dog species. However, because of the early black-tailed prairie dog extirpation in Arizona, poisoning levels specific to GPDs are reported after 1924 in Forest Guardians et al. (2004) and Forrest (2002).

At approximately the same time the negative 90-day petition finding was published in the Federal Register, Wagner et al. (2006) was published, which reported that 70% of 270 colonies (within 71 complexes) surveyed in Arizona become inactive between 2000 and 2001 (See Figure 1). The total area occupied by GPDs declined from over 13,500 hectares to approximately 4,500 hectares. The sizes of complexes in this study were small even prior to the mass extirpation: in 2000-2001, 89% of the active complexes were less than 100 hectares and more than half measured under 20 hectares. Colonies were vulnerable to extirpation regardless of size or age, but colonies were more likely to persist if their nearest neighboring colony persisted.<sup>7</sup> The authors suggest that plague was the cause of this significant decline in active colonies. See Attachment 8: Wagner et al. (2006).



**Figure 1. Recent GPD Surveys in Arizona Show Widespread Inactivity.**

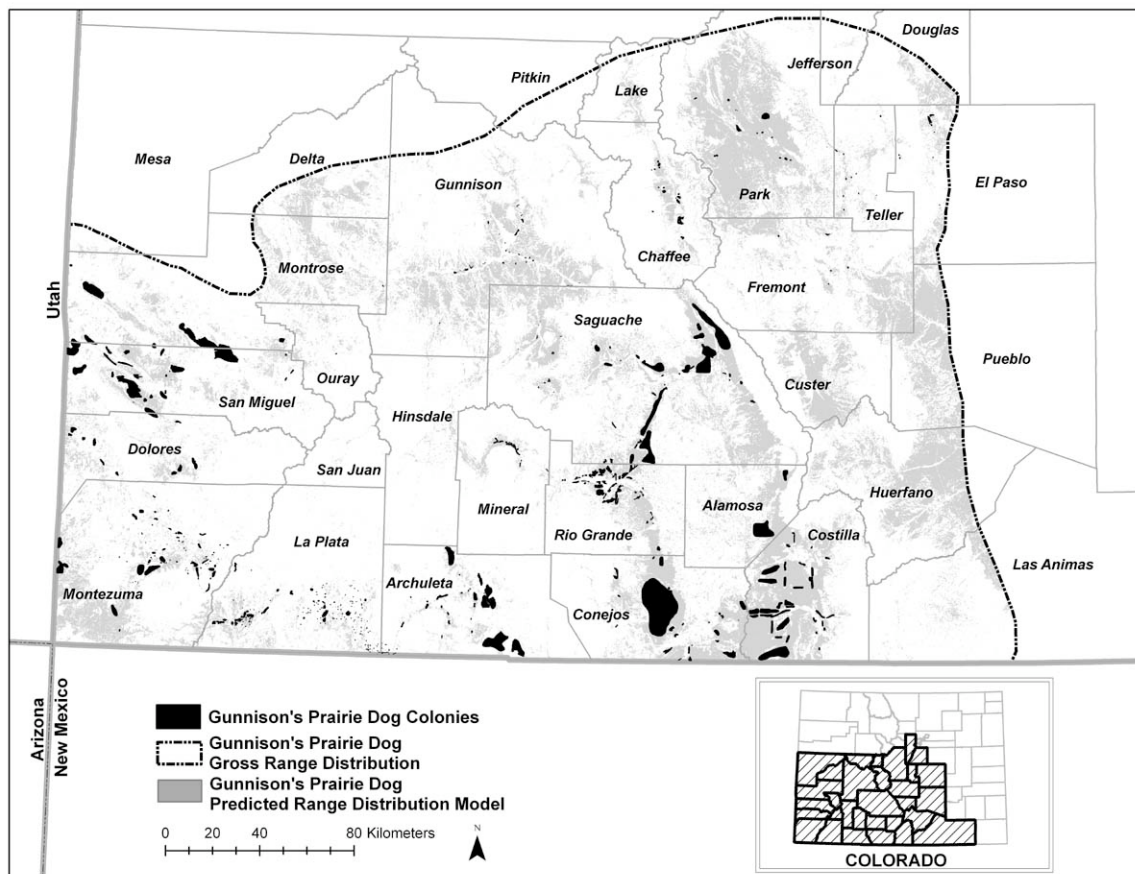
Excerpted from Wagner et al. (2006: 333): “Map of northern Arizona indicating the locations of 270 Gunnison’s prairie dog colonies that were originally surveyed in 1987, 1990–1994, or 1998 and resurveyed in 2000–2001. Colonies that were active in 2000–2001 are indicated by the closed circles (d), inactive colonies are indicated with open circles (s). The solid line and inset indicate the approximate current range of this species in Arizona (modified from Hoffmeister, 1986). The gray shaded region indicates areas where previous survey data were unavailable. Colored polygons indicate the distributions of the three major vegetation types in our study area, which are based upon Brown (1994). These vegetation types are: desert grassland (DG), pinyon–juniper (PJ), and ponderosa pine (PO).”

<sup>7</sup>However, the authors note that, because few of the colonies in the study were isolated, it is not possible to draw conclusions about isolation of GPD colonies and their persistence.

The authors stated that, “our results indicate a downward trend in Arizona populations of this species...” (Wagner et al. 2006: 337). Arizona constitutes 25% of the gross range of the GPD and 27% of the predicted range (Seglund et al. 2006: Table 2 at p. 70). All site-specific occupied habitat estimates and colony population numbers cited in the negative 90-day finding for Arizona, except Aubrey Valley, reported a decreasing population trend. 71 Fed. Reg. 6241, 6244-6245.

### Colorado

GPDs have been extirpated from extensive areas in Colorado. We described this at length in Forest Guardians et al. 2004 at pp. 26-28. Figure 2 is excerpted from Seglund et al. (2006) and shows the scant amount of area occupied by the GPD within its gross or predicted range.

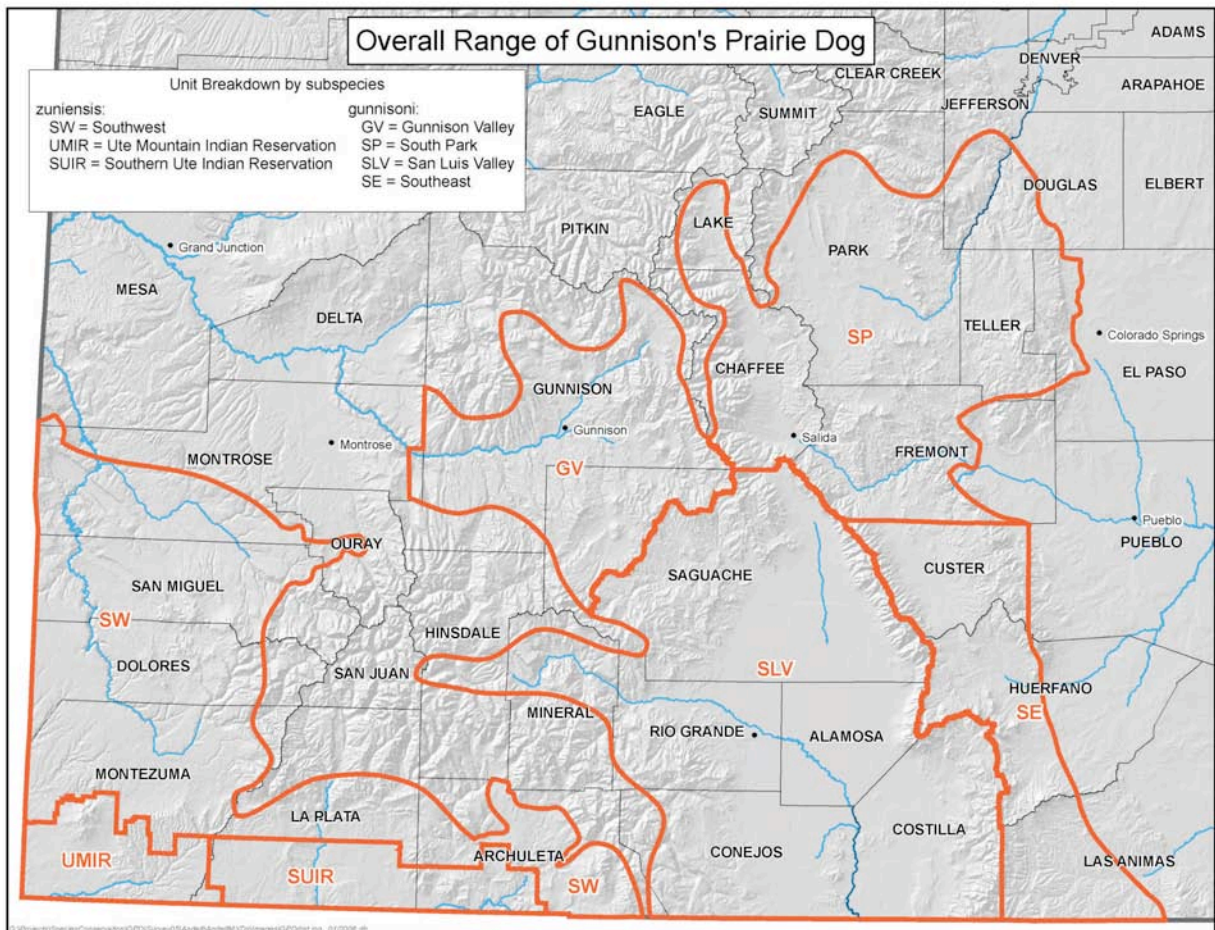


**Figure 2: Gunnison's prairie dog colonies in Colorado (as of 2002). Excerpted from Seglund et al. (2006: 79).**

Seglund et al. (2006) report that 151,547 acres of active white-tailed (*C. leucurus*) and Gunnison's prairie dogs colonies are estimated as occurring throughout the states. These estimates, however, require ground-truthing. Even if all of this occupied acreage was GPDs (which it isn't), this represents a mere 2% of the GPD's gross range, and 6% of its

predicted range in Colorado. All site-specific occupied habitat estimates and colony population numbers cited in the negative 90-day finding for Colorado reported a decreasing population trend. 71 Fed. Reg. 6241, 6244-6245. Figure 2 and the quantitative information of occupied acreage indicate the pattern of extirpation and small and isolated colonies of GPDs found in the state. Colorado represents 31% of the GPD's gross range and 25% of its predicted range (Seglund et al. 2006: Table 2 at p. 70).

It is especially crucial to consider the status of the two GPD subspecies in Colorado, and Figure 3 provides a delineation of seven different GPD regions in Colorado: three occupied by *zuniensis* and four occupied by *gunnisoni*.



**Figure 3. Delineation of Gunnison's prairie dog regions in Colorado.** This map was designed to guide surveys and is excerpted from Andelt and Seglund 2007.

In Forest Guardians et al. (2004) at pp. 26-28, we discuss how extensive extirpation or decline has occurred in the San Luis Valley, Gunnison Valley, and South Park regions, which represent three of the four *gunnisoni* subspecies regions in Colorado.

*New Mexico*

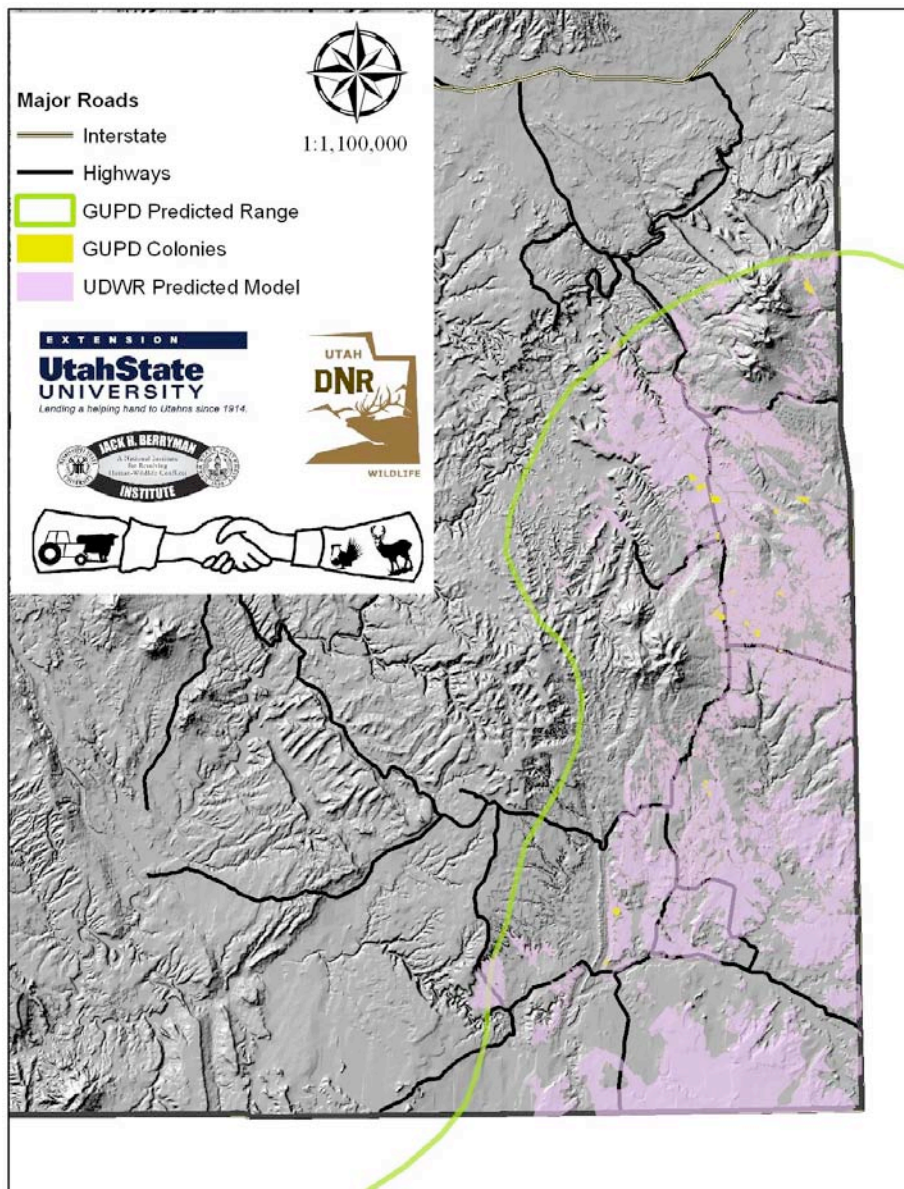
We described in Forest Guardians et al. (2006: 28-31) how the GPD dwindled from approximately 4.5 million acres historically to 75,000 acres in the 1980s. The negative 90-day finding contained an estimate even lower than ours: more than 9,108 acres. 71 Fed. Reg. 6241, 6244. No current data is available for the extent of occupied GPD acres in New Mexico. Surveys are ongoing but data are not yet available (James Stuart, NMDGF, pers. comm.). All site-specific occupied habitat estimates and colony population numbers cited in the negative 90-day finding for New Mexico reported a decreasing population trend. 71 Fed. Reg. 6241, 6244-6245. New Mexico constitutes 40% of the gross range and 45% of the predicted range for the GPD (Seglund et al. 2006: Table 2 at p. 70).

*Utah*

The known occupied GPD habitat in Utah measures 3,687 acres. This is despite a predicted habitat range of 839,500 acres (Lupis et al. 2007), which indicates an occupancy level of only 0.4%.<sup>8</sup> The April 2007 draft state plan for GPD management shows the extremely low amount of known occupied acreage in Figure 4. The only site-specific assessment of a GPD population in Utah in the negative 90-day finding indicated that the colony had been extirpated. 71 Fed. Reg. 6241, 6244-6245. Utah constitutes 4% of the gross range and 3% of the predicted range of the GPD (Seglund et al. 2006: Table 2 at p. 70).

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<sup>8</sup>While Lupis et al. (2007) note 63 additional GPD colonies in Utah, they have not been surveyed due to trespass restrictions. Consequently, these colonies cannot be verified as active colonies. Lupis et al. also note that transects were established in 2005 on public land in Utah, but does not include an estimate of total occupied acreage on public land.



**Figure 4. Gunnison's prairie dog colonies in Utah.** Excerpted from Lupis et al. (2007: Figure 4).

#### Threats to the Gunnison's prairie dog

While it seems plague is the leading threat to GPDs, impacts from other threats may reduce GPD populations, particularly when their cumulative impacts are considered. Indeed, given the threat of plague, Wagner et al. (2006: 337) recommend that poisoning, shooting, and habitat destruction “could be more tightly controlled or eliminated.” We discuss in detail how the negative 90-day finding failed to recognize multiple significant threats to GPDs from habitat loss, shooting, poisoning, and plague in our August 2006 Notice of Intent to Sue the Service over this negative petition finding. See Attachment 3. We documented those threats in detail in Forest Guardians et al. (2004) at pp. 33-96.



While Seglund et al. (2006) is the interstate working group's report, which seeks to avoid listing, this report acknowledges threats to the GPD in each of the four states in its historic range:

*Arizona*: "Agriculture, urbanization, shooting, and plague in Arizona have collectively have [sic] played a role in the apparent decline in occupied habitat" (p. 16).

*Colorado*: In addition to poisoning campaigns and colony isolation and fragmentation, "The cumulative impacts of agriculture, urbanization, shooting, plague, and oil and gas development in Colorado may have further effects over time, and collectively may have played a role in decline of GPD populations within the state. The majority of the GPD gross and predicted range occurs on private and tribal lands, which limits the ability of federal and state agencies to monitor and manage the species. The degree to which oil and gas development is impacting GPD populations is unknown, but development is increasing and the effects of this disturbance on populations should be evaluated" (p. 21).

*New Mexico*: Stated threats include poisoning and plague (pp. 25-26).

*Utah*: In addition to colony isolation, "Human disturbances on GPD habitats in Utah are limited mainly to shooting, oil and gas development, and agriculture. Shooting closures during the breeding season (1 April-15 June) were implemented in 2003 on all public lands, but shooting remains unregulated on private lands. Oil and gas development within GPD habitat has accelerated within the past few years." (p. 27).

#### *Impacts from plague*

We discussed in detail in Forest Guardians et al. (2004) at pp. 61-67 how a major threat to the survival of the Gunnison's prairie dog comes from sylvatic plague. Indeed, Service biologists considered this a significant threat in the January 19, 2006 version of the 90-day finding on the GPD, which was later reversed by direction from Chris Nolin and Julie MacDonald. See Attachment 9: USFWS email dated January 19, 2006. The principal change between the positive 90-day finding of January 19, 2006 and a negative finding drafted by January 23, 2006, was a change in how sylvatic plague was characterized. The January 19 version stated at p. 31,

We have determined that substantial information is presented in the petition and available in our files to indicate that sylvatic plague may threaten the Gunnison's prairie dog such that listing may be warranted.

The reversed posture taken in the negative finding is that the impact of sylvatic plague on Gunnison's prairie dog is "unclear" and new information is needed:

We have determined that information in the petition and readily available in our files do not constitute substantial scientific information that disease or predation are threats to Gunnison's prairie dog such that listing under the Act may be warranted. We recognize that sylvatic plague has been and continues to be a major mortality [sic] factor for Gunnison's prairie dog, but the impact that this disease has had on the overall status of the species

remains unclear. More information on the impacts of disease, specifically sylvatic plague, with regard to persistence of Gunnison's prairie dog populations is needed.

See Attachment 10: USFWS email dated January 23, 2006 at p. 28. No new science intervened in the four-day period between the positive and negative 90-day finding drafts. This reversal, and subsequent litigation, is a primary reason why the Service is undertaking the current 12-month status review. The Service's status review – this time based on science, not politics – should conclude that plague is a significant threat to the survival of the GPD. On this basis alone, the GPD should be listed (although other threats to GPD are also significant).

Plague is a disease caused by a bacterium (*Yersinia pestis*). Like other species of prairie dog, Gunnison's have no resistance and succumb quickly (Gage et al. 1995; Biggins and Kostoy 2001). Once plague gets into a prairie dog colony, the mortality can be 85-99 percent of the animals in the colony within a matter of days to a few weeks (Menkens and Anderson 1991). The disease first appeared in Gunnison's prairie dogs in Arizona in 1932 and in New Mexico in 1938. Since then, plague has spread across the entire range of the Gunnison's, white-tailed, and Utah prairie dogs, and the majority of the range of the black-tailed prairie dog (*C. ludovicianus*).

Plague has an enormous impact on prairie dogs and can have serious consequences for the survival of populations. With mortality rates of up to 99 percent, plague can cause the extirpation of entire colonies (Cully et al. 2006). A study of the effects of plague on Gunnison's prairie dogs in northern Arizona showed that out of 270 colonies that were known to exist in surveys conducted in 1987, 1990-1994, and 1998, most (70 percent) were inactive by 2000-2001 due to plague epizootics (Girard et al. 2004; Wagner et al. 2006). Plague was responsible for an almost 100 percent die-off of prairie dogs on 250,000 hectares (625,000 acres) in South Park, Colorado, over a two-year period around 1950. In the Moreno Valley of northern New Mexico, prairie dogs went from being abundant in 1984 to small, isolated colonies in 1997, as a result of plague (Cully and Williams 2001). Recent research on the rapid transmission of plague by unblocked fleas, resulting in epizootics among prairie dog populations (Eisen et al. 2006), highlights the need for understanding the different mechanisms by which plague epizootics can arise.

Plague continues to leave its mark on Gunnison's prairie dog colonies throughout their range. As discussed above, it was likely plague that caused 70% of GPD colonies analyzed in Arizona to become inactive between 2000 and 2001 (Wagner et al. 2006). In 2007, plague outbreaks resulted in over 90% mortality of two separate prairie dog colonies comprising approximately 300 acres in Flagstaff, Arizona. Since 2004 plague outbreaks in New Mexico have occurred in Colfax County, Santa Fe County and east of Albuquerque resulting in prairie dog die-offs potentially affecting the stability of populations in this region (NM Dept of Health, Epidemiology and Response Division, pers. comm.). Die-offs of GPD due to plague in Taos and Rio Arriba counties were reported at the July 2007 meeting of the New Mexico Prairie Dog Working Group (New Mexico Prairie Dog Working Group Minutes, July 12, 2007) (Attachment 11).

Wagner et al. (2006: 337) write, "Although we focused only on populations in Arizona, plague occurs throughout the range of Gunnison's prairie dog (Barnes, 1982) and probably represents an important threat throughout its range (Knowles, 2002)."

*Impact of habitat loss and degradation*

We discussed in Forest Guardians et al. (2004) at pp. 33-52 the threat posed to prairie dogs from habitat loss and degradation, as well as the related threat of isolation and fragmentation of remaining populations. In addition, the introduction of plague into the range of prairie dogs has contributed to the increasing fragmentation of prairie dog colonies and altering population dynamics such that they exhibit metapopulation properties (Roach et al. 2001; Lomolino and Smith 2003). While an indirect consequence of plague and other threats, habitat fragmentation poses a substantial danger as well. For instance, while habitat fragmentation may hamper the ability of individuals to disperse, the underlying mechanism for reduced persistence of a population may be due to the consequences associated with lower rates of gene flow. Research by Trudeau (2004) demonstrated that black-tailed colonies exposed to plague had significantly reduced heterozygosity, or genetic diversity, which can lead to inbreeding depression and inability to adapt to environmental change. Healthy populations of animals require adequate levels of genetic diversity, the lack of which can cause problems such as lethal mutations, low resistance to infectious disease, and reduced survival (Frankham 1995; Heschel and Page 1995). In addition, the ability of a species to adapt to changing environments and conditions can be compromised (Frankel and Soulé 1981).

Seglund et al. (2006) discount the impact of habitat destruction due to agriculture and urbanization on GPDs because of their use of the occupancy model. However, they also write "Agriculture, urbanization, shooting, and plague in Arizona have collectively have played a role in the apparent decline in occupied habitat" (Seglund et al. 2006: 16). While Wagner et al. (2006) attribute plague to the decline in active GPD colonies in Arizona, they note that their study did not analyze colonies within urban areas and colonies in those areas may be impacted by development. Certainly development in urban areas discussed in Forest Guardians et al. (2004) continues, with resultant loss of GPD colonies. For example, some 80% of Santa Fe's GPDs have been lost from development and other land uses over the past decade. See Attachment 12: Forest Guardians et al. (2006) Gunnison's Prairie Dog Conservation Plan for the City of Santa Fe. Losses in Albuquerque, New Mexico; Taos, New Mexico; and Flagstaff, Arizona, have continued since the 2004 listing petition was submitted.

Oil and gas drilling in the San Juan Basin continues to destroy GPD habitat. Most alarming is the increased use of Categorical Exclusions (CEs) by the U.S. Bureau of Land Management (BLM). CEs bypass the normal environmental review for new oil and gas wells required under the National Environmental Policy Act. Instead of environmental assessments, brief checklists without any public comment or independent scientific reviews amount to a rubberstamp on new wells. For example, the Farmington Field Office in New Mexico, which is in the heart of GPD habitat, now categorically excludes

approximately 90% of new wells. In its 12-month status review, the Service must conduct an exhaustive review of all oil and gas leasing and authorization of new wells by the BLM and the U.S. Forest Service within the four-state range of the GPD.

*Impacts of shooting*

We discussed in Forest Guardians et al. (2004) at pp. 52-61 the impacts to GPDs from shooting. Forest Guardians’ petition to list the black-tailed prairie dog (Forest Guardians et al. 2007) also reviews prairie dog shooting literature at pp. 72-78. GPD shooting remains unrestricted in New Mexico, which includes almost half of the GPD’s range. There are seasonal closures in the other three states with GPDs: Arizona has an April 1 – June 15 closure on public and private lands, Colorado has a March 1- June 14 closure on public lands, and Utah has an April 1 – June 15 closure on public lands. The majority of the predicted range in Colorado (72%) and Utah (56%) is private and tribal lands (Seglund et al. 2006), which will not be regulated by the seasonal closures. In Arizona, despite seasonal closures that apply to both public and private lands, as we discuss below, there has been an increase in numbers of GPDs shot since the closure went into effect.

Wagner et al. (2006) state that recreational shooting probably reduces GPD populations in Arizona (to a lesser degree than shooting impacts to black-tailed prairie dogs) and provide the following information for GPDs killed on non-tribal lands:

<b>Year</b>	<b>Number of GPDs shot</b>
2000	91,864
2001	75,791
2002	21,134
2003	37,659
2004	54,117
2000-2004	280,565

**Table 1: Gunnison’s Prairie Dogs Shot in Arizona, 2000-2004 (Wagner et al. 2006).**

While there was initially a decline in the number of GPDs shot after the seasonal closure went into effect, that decline has not been maintained. In fact, the number of GPDs shot in 2005 was 93,229, which is higher than levels when year-long shooting was legal in Arizona.

Research on shooting that has emerged since the Forest Guardians et al. 2004 listing petition includes Jonathan Pauli’s studies. Pauli (2005) (Attachment 13) found that continued recreational shooting reduces and alters reproduction rate of prairie dogs. Pauli systematically had 30% of the prairie dogs at five colonies shot, and then compared the results to five untreated colonies. Alert behavior was eight times higher on shot colonies after treatment, and above-ground activity declined by 66% on shot colonies after treatment. Surviving adults on shot colonies showed a 35% decrease in body condition, a 30% increase in flea loads (important to plague transmission), and an 80% increase in stress hormones. Shot colonies showed a 50% reduction in pregnancy rates and a 76% decline in reproductive output. This study documented mechanisms for several additive

impacts of shooting. After exposure to shooting, the animals also spend more time underground leading to increased flea loads. Both prairie dogs and black-footed ferrets are highly susceptible to plague, a fatal bacterial pathogen that is transmitted via flea bites. Hence, recreational shooting of prairie dogs may indirectly increase sylvatic plague mortality of both prairie dogs and black-footed ferrets by facilitating an increase in fleas.

In addition, the impacts to associated wildlife from shooting are significant. After recreational shooting occurs, the prairie dog carcasses are left to be scavenged by birds and mammals, including the endangered black-footed ferret (*Mustela nigripes*) and the recently delisted bald eagle (*Haliaeetus leucocephalus*). Pauli and Buskirk (2007) (Attachment 14) reported that 87% of prairie dogs killed with expanding bullets, often used in recreational shooting, contained bullet fragments. 47% of the prairie dogs shot with expanding bullets contained enough lead to be lethal to nestling raptors and potentially lethal to adult raptors. More than 70% of the lead found in the carcasses was likely too small to be avoided during ingestion or regurgitated in pellets. These findings suggest recreational shooting of prairie dogs with expanding lead bullets could pose serious threats to scavenging species, particularly raptors.

#### *Impacts of poisoning*

There continue to be no limits on the amount of GPD individuals or GPD-occupied acreage that can be poisoned. Gas cartridges remain a general use pesticide that can be applied to GPDs. Other pesticides, such as aluminum and zinc phosphides, while they are restricted use and thus require applicators be certified, can be used without limits. It also remains very simple to obtain certification. Additionally, several states have signaled an interest to increase the number of methods available to kill prairie dogs, including the poisons Rozol and warfarin and the Rodenator. In 2006, Colorado approved the use of the Rodenator and a special local need label for Rozol.

Lethal control of GPDs has occurred on both the Albuquerque and Santa Fe airports since the 2004 listing petition was filed. Illegal GPD poisoning occurred in Albuquerque in August 2007. The toxicant used caused deaths of birds protected under the Migratory Bird Treaty Act. Although a clear violation of federal law, the Service refused to prosecute the perpetrator despite requests from Forest Guardians.

#### *Need for reintroduction*

Wagner et al. (2006) state that, given the GPD's extirpation from large areas in its historic range, restoration to areas from which it is missing can help ensure survival.

#### State Gunnison's prairie dog conservation efforts

##### *Interstate plan*

We have attached comments from Forest Guardians and others submitted to the Arizona Game and Fish Department in July 2006 on the rangewide Gunnison's Prairie Dog

Conservation Plan. See Attachment 15. See also Grand Canyon Wildlands Council et al. comments dated June 2006 (Attachment 16). The plan fails to recognize or understates the threats to the GPD from habitat loss and degradation, colony fragmentation and isolation, shooting, plague, poisoning, and inadequate regulatory mechanisms. It is a voluntary plan which, even if it were rewritten to be enforceable, would not adequately protect the GPD, given that it fails to provide minimum standards to ensure that state management plans will address the five listing factors. In short, this "conservation" plan fails to recognize current threats to GPD and consequently fails to address these threats.

*Arizona*

We have attached comments from Forest Guardians and others submitted to the Arizona Game and Fish Department in June 2007 on the Arizona Gunnison's Prairie Dog Conservation Plan. See Attachment 17. Like the rangewide plan, the Arizona plan is voluntary and therefore unenforceable. Our comments point out that the plan fails to adequately ensure the survival and recovery of the GPD, as the conservation goals it sets are too low and it does not sufficiently reduce threats to this species. While some of our critiques were addressed in an October 2007 version of the state plan, such as recognizing GPDs as a highly interactive species and a revision of the plague discussion, other comments, such as curtailing threats of poisoning, shooting, and habitat destruction, were not.

*Colorado*

A plan has not yet been drafted by Colorado.

*New Mexico*

A plan has not yet been drafted by New Mexico: a draft is expected by the end of 2007 or early 2008 (New Mexico Prairie Dog Working Group Minutes, July 12, 2007). However, participants in the New Mexico Prairie Dog Working Group seem to recognize the problematic nature of using plans to avoid listing:

A key issue recently identified will be using the strategy and plan to keep the GPD from being federally listed, using the Policy of Evaluation of Conservation Efforts (PECE); meeting the PECE standards, which are very definitive in nature, will be problematic, in that the standards necessitate commitments of actions and funding that managers may not be willing to make.

See New Mexico Prairie Dog Working Group Minutes, May 10, 2006 at p. 2 (Attachment 18).

Importantly, the New Mexico Department of Game and Fish believes that GPDs are not under their purview to manage:

Chuck noted that P-dogs are not “owned” by the state, unlike game species. Ownership/management authority of prairie dogs may apply at the individual tribal level, depending upon the laws, regulations, and policies or each tribe or pueblo, but would not be subject to state-level regulations. P-dogs are not huntable on State Trust lands. A permittee on State Trust lands could do P-dog control. For NM residents, no hunting license required to shoot P-dogs.

New Mexico Prairie Dog Working Group Minutes, January 18, 2006 at p. 2. If it is accurate that the state cannot regulate GPD management, without federal listing, GPDs both are not and cannot be provided with any protections from take. This is particularly significant given that 45% of the GPD's predicted range occurs in New Mexico (Seglund et al. 2006). The prospect of leaving GPD management in local hands raises concerns: three counties in New Mexico have adopted ordinances prohibiting GPD restoration (Lincoln, Hidalgo, and Torrance).

### *Utah*

We have attached comments submitted in April 2007 by Center for Native Ecosystems and Forest Guardians on the Utah Gunnison's Prairie Dog and White-tailed Prairie Dog Conservation Strategy (Lupis et al. 2007). See Attachment 19. In these comments, we recommend additional goals such as securing protected areas for these two species, recovering the prairie dog ecosystem and prairie dog associated wildlife, and reducing impacts from plague. We also question whether the Bureau of Land Management would implement land use restrictions to protect GPDs, point out failures of the plan to address multiple threats, and indicate ways in which threats are understated (including, for example, habitat destruction, disturbance from oil and gas, harms from livestock grazing, and threats from noxious weeds). Most importantly, the Utah plan would not increase protection of GPDs until there is a 40% additional decline or until 2012. This is extremely alarming given that there are only 3,687 acres known to currently exist in the state, most of which are in colonies less than 25 acres in size (Seglund et al. 2006).<sup>9</sup>

### Gunnison's prairie dogs' ecological role

Protection for the GPD is warranted given the imperiled biological status of this species. In addition, GPD listing would help fulfill the ecosystem protection purpose of the ESA. We described in our petition to list the GPD how this species play keystone roles in the ecosystems they inhabit (Forest Guardians et al. 2004: 8-10). Forest Guardians et al. (2007) also reviews the literature on prairie dogs' keystone role at pp. 18-20. In addition, GPDs should be considered a strongly interactive species and should be present in numbers sufficient to carry out their interactive and ecological roles. The GPD should be recovered so that it exists in numbers and at densities sufficient for ecological effectiveness (Soulé et al. 2003, Soulé et al. 2005, Grand Canyon Wildlands Council 2006) (Attachments 20-22).

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<sup>9</sup>Supra note 8.

Recent research is further demonstrating the ways in which GPDs play strongly interactive and keystone roles in the habitats where they reside.<sup>10</sup> Davidson and Lightfoot (2007) (Attachment 23) found that both Gunnison's prairie dogs had keystone impacts on arthropod communities, as did black-tailed prairie dogs (*C. ludovicianus*) and banner-tailed kangaroo rats (*Dipodomys spectabilis*). Moreover, they determined that when multiple keystones interact, the result is a unique combination of habitat and therefore more biodiverse arthropod communities. GPDs increased arthropod species richness and abundance and significantly changed arthropod species composition. These results are likely due to increased organic materials and favorable microhabitats found on GPD colonies and particularly in their burrows. Insects using GPD burrows included a rare ant (*Aphaenogaster punctaticeps*) and a rare camel cricket (*Ceuthophilus fissicaudus*).

Bangert and Slobodchikoff (2006) (Attachment 24) similarly found that GPDs increased beta and gamma diversity of arthropods, and perform ecosystem engineering that provides a unique ecological service. The authors support the characterization of prairie dogs as keystone species.

Davidson and Lightfoot (2006) (Attachment 25) found keystone effects of black-tailed prairie dogs and banner-tailed kangaroo rats on plant species diversity as well. These burrowing rodents were found to create unique habitats and distinctive plant communities. GPDs likely have similar keystone impacts on plants (Davidson, pers. comm.).

Cartron et al. (2004) (Attachment 26) found that GPDs were an important source of prey for the ferruginous hawk (*Buteo regalis*) in New Mexico, which further supports our discussion of this issue in Forest Guardians et al. (2004) at pp. 9-10.

Davis and Theimer (2003) (Attachment 27) found that lesser earless lizards (*Holbrookia maculata*) were more abundant on GPD colonies than in non-colonized areas. Their research suggests the importance of prairie dog burrows for this reptile, which could benefit this lizard by providing refuge from predators, aiding in thermoregulation, and serving as over-winter hibernacula. They noted other literature which has found that additional reptile and vertebrate species use rodent burrows to escape predation (Vaughan, 1961; Gehlbach, 1965; Cooper 1997, cited in Davis and Theimer 2003).

The Service recognized in the 1990s that protecting prairie dogs was an excellent way to protect the prairie dog ecosystem, which includes a species already listed under the ESA (the black-footed ferret) as well as other dwindling species. See Attachment 28: FWS Brochure.

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<sup>10</sup>While Bartz et al. (2007) asserted that GPDs do not play keystone roles in northern Arizona, that paper contains significant methodological flaws which cast doubt on the validity of the findings (pers. comm., Jennifer Verdolin, Con Slobodchikoff, and Ana Davidson).



### Climate change

Since Forest Guardians et al.'s 2004 listing petition, growing evidence is emerging that the southwestern United States will suffer grave impacts from climate change. Impacts to the GPD include the likelihood of increased drought. The Utah plan for GPDs and white-tailed prairie dogs discussed this impact:

GPDs and WPTDs have evolved in arid environments with periodic drought conditions. However, because of the cumulative effects of other factors influencing viability of these species, the impact of drought on populations may be more pronounced and lasting. In addition, global warming may produce drought events at a greater frequency and duration, further compounding its effects.

Studies have found that both UPDs and GPDs on productive, wet sites have greater body mass, higher population densities, and faster expansion rates (Crocker-Bedford and Spillett 1981; Collier 1975; Rayor 1985). The same is likely true for WTPDs. Drought decreases the amount of available forage for GPDs and WTPDs, promotes the spread of invasive and noxious plant species, and stresses other prey species, possibly making GPDs and WTPD more susceptible to predation.

See Lupis et al. 2007 at p. 30. Additional studies predict that the southwestern U.S. will be more likely to experience prolonged drought in coming decades (Smith et al. 2005) (Attachment 29), Thomson et al. 2005 (Attachment 30), Seager et al. 2007). In addition, studies also show that the southwestern U.S.'s current conditions are extremely dry due to global warming (Brook et al. 2006). Discussing the southwest, Richard Seager, a scientist at Columbia University's Lamont Doherty Earth Observatory, stated: "You can't call it a drought anymore, because it's going over to a drier climate. No one says the Sahara is in drought" (Gertner 2007) (Attachment 31).

Alternatively, increased precipitation events and warmer temperatures (Smith et al. 2005, Thomas et al. 2005) could lead to increases in sylvatic plague (Parmenter et al. 1999 (Attachment 32), Gubler et al. 2001 (Attachment 33), Enscoe et al. 2002 (Attachment 34), Yates et al. 2002 (Attachment 35), Kolivras and Comrie 2004, Collinge et al. 2005 (Attachment 36), Linden 2006, Ray and Collinge 2007 (Attachment 37), Stapp 2007 (Attachment 37)).

GPDs therefore face significant harms – from either increased sylvatic plague or prolonged drought, or a combination of the two – in different climate change scenario. Exacerbated by lethal control and habitat destruction, the future survival prospects for the GPD are therefore bleak. Federal listing is urgently required.

The prairie dog genus needs listing

Two prairie dog species – the Mexican (*C. mexicanus*) and Utah (*C. parvidens*) – are already listed under the ESA. The other three species – the Gunnison's, the white-tailed, and the black-tailed – have all been petitioned for listing. All five species in the prairie dog genus warrant ESA listing. All five have declined by over 90% in the past century. All five play important ecological roles in the ecosystems they inhabit, and all five have suffered greatly from habitat destruction, plague, and active persecution by humans. Providing federal protection to the three unlisted prairie dogs is warranted given their biological imperilment and will also fulfill the ESA's ecosystem protection purpose (Rosmarino 2002) (Attachment 38). Reclassifying the Utah prairie dog to endangered status will help recover that critically endangered species (Forest Guardians et al. 2003) (Attachment 39).

While these comments are submitted specifically as a part of the Gunnison's prairie dog 12-month status review, we also strongly urge the Service to issue expeditiously a positive 90-day finding on the black-tailed prairie dog ESA petition (Forest Guardians et al. 2007) (Attachment 40), undertake a 12-month status review on the white-tailed prairie dog ESA petition (Center for Native Ecosystems et al. 2002) (Attachment 41), and issue a positive 90-day finding for the Utah prairie dog reclassification petition.

Conclusions

We strongly support ESA listing for the Gunnison's prairie dog. Its survival is threatened by plague, habitat destruction, shooting, poisoning, climate change, and inadequate regulatory mechanisms. Due to political interference by Julie MacDonald, this species was denied urgently needed protection under the ESA. Now the Service has a chance to correct this error: on or before February 1, 2008, the Service should publish a proposal to list this species.

Sincerely,



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List of Attachments (provided on CD)

- Attachment 1: Forest Guardians et al. (2004).
- Attachment 2: Forest Guardians email to USFWS (2005).
- Attachment 3: Forest Guardians Notice of Intent to Sue (2006).
- Attachment 4: Forest Guardians comments on 2005 draft interstate Gunnison's Prairie Dog Conservation Assessment.
- Attachment 5: Hafner et al. (undated).
- Attachment 6: Assal and Lockwood (2007).
- Attachment 7: New Mexico Prairie Dog Working Group Minutes January 2006.
- Attachment 8: Wagner et al. (2006).
- Attachment 9: USFWS email dated January 19, 2006.
- Attachment 10: USFWS email dated January 23, 2006.
- Attachment 11: New Mexico Prairie Dog Working Group Minutes July 2007.
- Attachment 12: Forest Guardians et al. (2006).
- Attachment 13: Pauli (2005).
- Attachment 14: Pauli and Buskirk (2007).
- Attachment 15: Forest Guardians et al. Comments on Interstate Gunnison's Prairie Dog Plan dated July 2006.
- Attachment 16: Grand Canyon Wildlands Council et al. Comments on Interstate Gunnison's Prairie Dog Plan dated June 2006.
- Attachment 17: Forest Guardians et al. Comments on Arizona Gunnison's Prairie Dog Plan dated June 2007.
- Attachment 18: New Mexico Prairie Dog Working Group Minutes May 2006.
- Attachment 19: Center for Native Ecosystems and Forest Guardians Comments on Utah White-tailed Prairie Dog/Gunnison's Prairie Dog Plan dated April 2007.
- Attachment 20: Soulé et al. (2003).
- Attachment 21: Soulé et al. (2005)
- Attachment 22: Grand Canyons Wildlands Council (2007).
- Attachment 23: Davidson and Lightfoot (2007).
- Attachment 24: Bangert and Slobodchikoff (2006).
- Attachment 25: Davidson and Lightfoot (2006).
- Attachment 26: Cartron et al. (2004).
- Attachment 27: Davis and Theimer (2003).
- Attachment 28: USFWS factsheet on prairie dog protection (undated).
- Attachment 29: Smith et al. (2005).
- Attachment 30: Thomson et al. (2005).
- Attachment 31: Gertner (2007).
- Attachment 32: Parmenter et al. (1999).
- Attachment 33: Gubler et al. (2001).
- Attachment 34: Enscoe et al. (2002).
- Attachment 35: Yates et al. (2002).
- Attachment 36: Collinge et al. (2005).
- Attachment 37: Stapp (2007), Ray and Collinge (2007).
- Attachment 38: Rosmarino (2002).
- Attachment 39: Forest Guardians et al. (2003).

Attachment 40: Forest Guardians et al. (2007).

Attachment 41: Center for Native Ecosystems et al. (2002).

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