4W Ranch FLP

Candidate Conservation Agreement with Assurances

Black-tailed Prairie Dog (*Cynomys ludovicianus*)
Mountain Plover (*Charadrius montanus*)
Burrowing Owl (*Athene cunicularia*)
Ferruginous Hawk (*Buteo regalis*)

An Agreement between

Major Robert L. Harshbarger and Jean S. Harshbarger
of the 4W Ranch FLP, Newcastle, Wyoming

and the

U.S. Fish and Wildlife Service

Final Draft

May 6, 2008

DRAFT 4W RANCH FLP
CANDIDATE CONSERVATION AGREEMENT WITH ASSURANCES

This Candidate Conservation Agreement with assurances (CCAA), effective and binding on the date of last signature below, is between Major Robert L. Harshbarger and Jean S. Harshbarger of the 4W Ranch Limited Family Partnership (FLP), Newcastle, Wyoming, and the U.S. Fish and Wildlife Service (Service) with the Wyoming Department of Agriculture, Wyoming Game and Fish Department, Natural Resource Conservation Service, and Weston County Natural Resource District as Cooperators.

Property Owners: Major Robert L. Harshbarger and Jean S. Harshbarger

Cooperators: Wyoming Department of Agriculture, Wyoming Game and Fish Department, Natural Resource Conservation Service, Weston County Natural Resource District

Service: The Service designates the following individual as the Agreement Administrator:

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Tracking Number: ***unique identifier to be used as a tracking number for the CCAA***.

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1. RESPONSIBILITIES OF THE PARTIES

1.1 PROPERTY OWNERS

The Property Owners agree to undertake the following conservation measures:

1. Manage core black-tailed prairie dog habitat to maintain a viable and self-sustaining population by enhancing desirable vegetation, and controlling undesirable vegetation,

2. Ensure that harvest of black-tailed prairie dog will occur only after monitoring indicates that established population thresholds are exceeded.

3. Maintain or enhance, where feasible, the quantity and quality of habitat for the mountain plover, burrowing owl, and ferruginous hawk,

4. Continue to manage the lands owned by the 4W Ranch FLP as set forth by the Grazing Management Plan (Harshbarger 2001), and

5. Educate and manage recreational shooters to ensure that black-tailed prairie dog harvest guidelines are closely followed (e.g., adherence to harvest levels, shooting locations, and protection of non-target species).

1.2 SERVICE

The Service agrees to provide the following technical assistance to aid the Property Owners in implementing the conservation measures, subject to authorized and appropriated funds:

1. Serve as an advisor to the landowners, providing expertise on the management and conservation of the black-tailed prairie dog and other species included in this agreement, and provide information on Service requirements regarding CCAAs.

2. Provide assistance in coordinating development and implementation of this Agreement.

3. The Service will make every effort to assist the Property Owners in obtaining funds for preserving habitat, monitoring assistance, and/or habitat improvements to achieve the conservation requirements and implement monitoring and adaptive management activities outlined in the *4W Ranch FLP CCAA* limited to the type, duration and amount detailed under Conservation Measures (Section 5. Conservation Measures, Pages 25-28).

2. ENROLLED LANDS

The 4W Ranch is a 29,000-acre cattle ranch in southwestern Weston and northwestern Niobrara Counties, Wyoming (Figure 1). The ranch is bisected by the Cheyenne River, which flows east through the property. The river and its associated uplands give rise to three main habitat types on the ranch. The area immediately adjacent to the river, approximately one-half mile wide, contains a cottonwood riparian forest interspersed with hay fields. It is the most biologically diverse area on the ranch. Moving north and south out of this riparian area, relatively flat short grass benches occur. These benches contain black-tailed prairie dog (*Cynomys ludovicianus*) colonies, which also provide habitat for nesting mountain plovers (*Charadrius montanus*), burrowing owls (*Athene cunicularia*), and ferruginous hawks (*Buteo regalis*). Upland from the short grass benches is the third major habitat on the ranch, sagebrush steppe. These areas are dominated by Wyoming big sage and silver sage, with rugged topography punctuated by ephemerally moist draws, some of which contain remnant cottonwood stands.

In cooperation with the Service in order to meet the habitat needs of certain species of wildlife, the 4W Ranch is willing to enter into a CCAA to provide and maintain needed habitat for the preservation of the four indentified species. The Service recognizes and agrees not to infringe upon the 4W Ranch's most fundamental and inalienable rights as guaranteed by the Constitution of the United States of America and the Constitution of the sovereign State of Wyoming. The full protection of private property rights is not inconsistent with attainment of important public goals.

The proposed 4W Ranch CCAA area covers approximately 3,370 acres of deeded lands in portions of Township 41 North, Range 67 West: Sections 13-15, 22-27, and 34-36; Township 41 North, Range 66 West: Sections 19-21, 28-31; and, Township 40 North, Range 67 West: Section 3 (Figure 1, Table 1 and Table 2). Of the 3,370 acres, approximately 3,000 acres are set aside as "core area" to benefit the black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk (See Table 1 for legal description and approximate acres). Management actions for the core area will be taken to maintain and enhance habitat for the black-tailed prairie dog, which will benefit other species. Approximately 370 acres of the 3,370 acres proposed for the CCAA are required for maintaining ranch viability (e.g., hay meadows) and will be managed to prevent any potential encroachment by the black-tailed prairie dog (See Table 2 for legal description and approximate acres). For additional information on management activities, see Section 4.5.2 Ranch Management (Page 24).

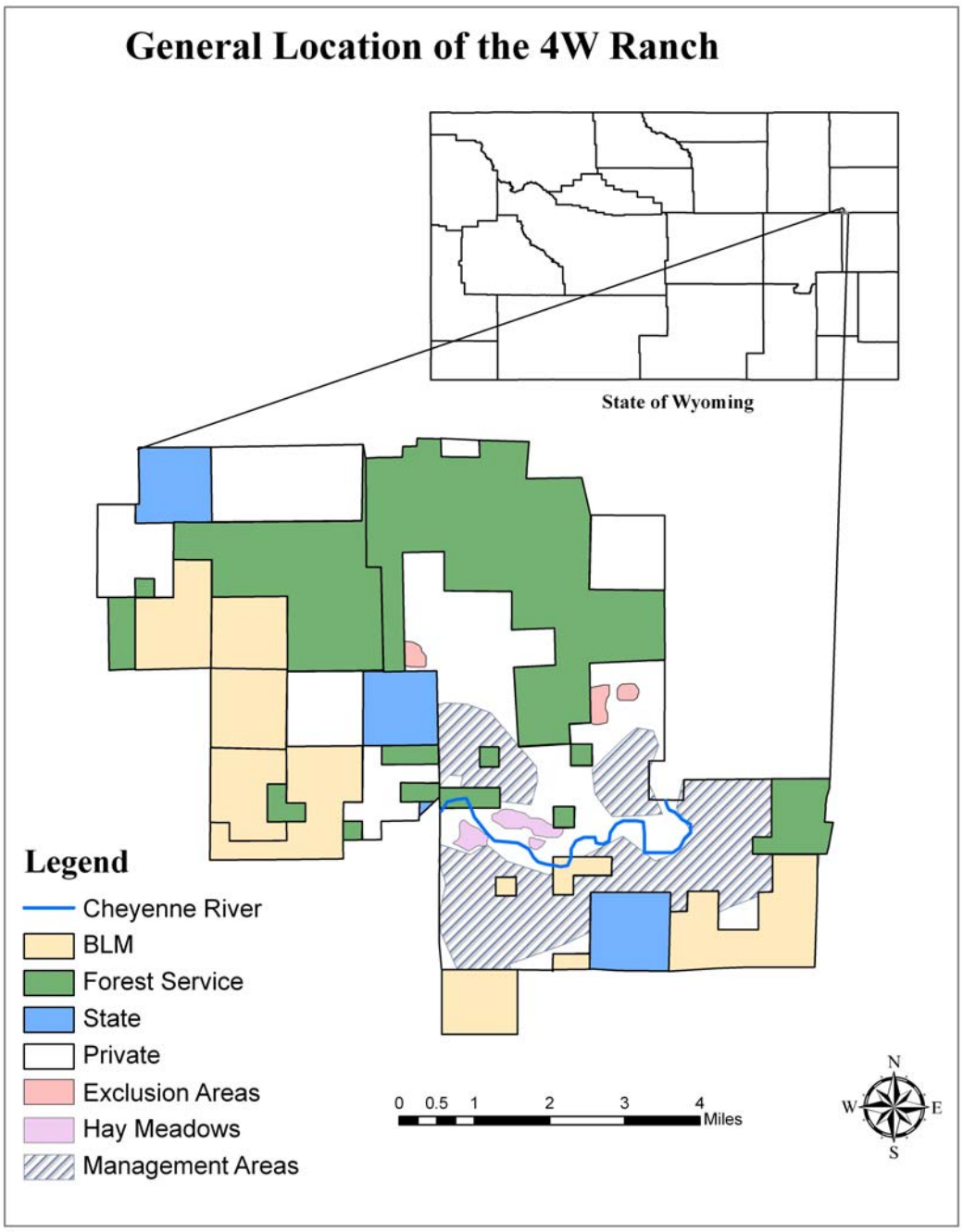

Figure 1. General location of the 4W Ranch in northwestern Niobrara and southwestern Weston Counties, Wyoming. The CCAA area is defined as the management areas (managed to provide habitat for prairie dogs), exclusion areas and hay meadows (both managed to exclude prairie dogs).

Table 1. Legal description of the core black-tailed prairie dog management area, including 4W Ranch pasture name, and approximate acreage, for the 4W Ranch CCAA.

Legal Description	4W Ranch Pasture Name	Acres
Township 41N Range 67W		
Section 13: S ½, SE ¼	Lower Cottonwood	80
Section 13: W ½, NW ¼, SW ¼	Lower Cottonwood	20
Section 13: W ½, NW ¼, SW ¼	Lower Cottonwood	20
Section 15: SW ¼	Bull	160
Section 15: S ½, SE ¼	Bull	80
Section 22: NW ¼	Horse	60
Section 22: S ½, NE ¼	Horse	80
Section 22: NE ¼, NE ¼	Horse	40
Section 23: NW ¼, NW ¼	Horse	40
Section 24: N ½, NE ¼	Lower Cottonwood	80
Section 24: SW ¼ NE ¼	Lower Cottonwood	40
Section 24: NW ¼, SE ¼	Lower Cottonwood	40
Section 24: E ½, SW ¼	Lower Cottonwood	80
Section 24: S ½, SE ¼	Branding Corral	80
Section 25: SE ¼	West Owl Creek	160
Section 25: E ½, SW ¼	West Owl Creek	80
Section 25: SW ¼, SW ¼	West Owl Creek	40
Section 26: SE ¼, SE ¼	Piney	40
Section 26: S ½, SW ¼	River	80
Section 27: SW ¼	Unk's	60
Section 27: SW ¼, SE ¼	Unk's	40
Section 34: N ½	Unk's/Piney	320
Section 34: SE ¼	Piney	160
Section 35: N ½	Piney	320
Section 35: SW ¼	Piney	160
Township 41N Range 66W		
Section 19: SE ¼	East Owl Creek	160
Section 19: E ½, SW ¼	West Owl Creek	80
Section 19: SW ¼ SW ¼	West Owl Creek	40
Section 20: SW ¼	West Owl Creek	160
Section 29: N ½, NW ¼	East Owl Creek	80
Section 29: SW ¼, NW ¼	East Owl Creek	40
Section 29: SW ¼	East Owl Creek	160
Section 30: NE ¼	East Owl Creek	160
Section 30: E ½, SE ¼	East Owl Creek	80
Section 31: NW ¼, NW ¼	West Owl Creek	40
Section 31: NE ¼, NE ¼	East Owl Creek	40

Note: The acreage numbers in this table represent the total acres for that parcel of ground, and do not necessarily reflect that the entire parcel is included in the CCAA. Refer to Figure 1 for a description of the CCAA area.

Table 2. Legal description of the exclusionary black-tailed prairie dog areas, including 4W Ranch pasture name, and approximate acreage, for the 4W Ranch CCAA.

Legal Description	4W Ranch Pasture Name	Acres
Township 41N Range 67W		
Section 9: W ½, SE ¼	Upper Cottonwood	30
Section 13: NW ¼	Lower Cottonwood	40
Section 22: SE ¼, SE ¼	Runway Meadow	40
Section 23: SW ¼, SW ¼	Runway Meadow	40
Section 26: NW ¼	East Meadow	100
Section 27: NW ¼	Unk's Hay Meadow	120

Note: The acreage numbers in this table represent the total acres for that parcel of ground, and do not necessarily reflect that the entire parcel is included in the CCAA. Refer to Figure 1 for a description of the CCAA area.

3. AUTHORITY AND PURPOSE

Sections 2, 7, and 10 of the Endangered Species Act of 1973, as amended (Act, 16 U.S.C. 1531 *et seq*.), allow the Service to enter into this CCAA. Section 2 of the Act states that encouraging interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the Nation's heritage in fish, wildlife, and plants. Section 7 of the Act requires the Service to review programs that it administers and to utilize such programs in furtherance of the purposes of the Act.

The purposes of the Act are "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved," and "to provide a program for the conservation of such endangered species and threatened species …" "Conserve" is defined in section 3(3) of the Act and means "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary." Lastly, section 10(a)(1)(A) of the Act authorizes the issuance of permits to "enhance the survival" of a listed species. Enhancement means that the permitted activities benefit species in the wild.

By entering into this CCAA, the Service is utilizing its Candidate Conservation Programs to further the conservation of the Nation's fish and wildlife. Consistent with the Service's "Candidate Conservation Agreement with Assurances Final Policy" (64 FR 32726), the conservation goal of this CCAA is to maintain and enhance black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk habitat and populations on non-Federal lands within the historic range of the species in northeastern Wyoming. This conservation goal will be met by giving the participating landowners incentives to implement conservation

measures through regulatory certainty concerning land use restrictions that might otherwise apply should these species become listed under the Act.

The purpose of this CCAA is for the Service to join with Major Robert L. Harshbarger and Jean S. Harshbarger to implement conservation measures for the black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk by preserving and enhancing habitat for these species, while reducing threats that are controllable within the defined CCAA core area (Figure 1).

Upon approval of the CCAA, 4W Ranch would be issued a section 10(a)(1)(A) permit by the Service, which authorizes certain forms of take of the covered species should they become federally listed. The section 10(a)(1)(A) permit would authorize incidental take of black-tailed prairie dogs, mountain plovers, burrowing owls, and ferruginous hawks should it occur. This authorized take would be incidental to implementation of habitat enhancement measures and recreational and agricultural activities, such as livestock grazing and production and use of vehicles on and off roads on the CCAA area (Figure 1). Such take would be authorized in the permit under the authority of regulations implementing Candidate Conservation Agreements with Assurances (50 CFR 17.22(d) for species federally listed as endangered or 50 CFR 17.32 (d) for species federally listed as threatened). This permit would also authorize the direct take of black tailed prairie dogs through primarily recreational shooting under the authority of regulations pertaining to issuance of enhancement-of-survival permits (50 CFR 17.22(a) for species federally listed as endangered or 50 CFR 17.32 (a) for species federally listed as threatened). The permit would include conditions for each type of take, including the required implementation of the CCAA. The CCAA includes the regulatory assurances set forth at CFR 50 17.22(d)(5).

4. DESCRIPTION OF EXISTING CONDITIONS, STATUS AND THREATS

4.1. BLACK-TAILED PRAIRIE DOG

The black-tailed prairie dog became a candidate for listing in 2000. In August 2004, the Service determined the black-tailed prairie dog no longer warranted candidate status. However, the black-tailed prairie dog is classified as a sensitive species by both Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management (USFS 2005; Carroll, 2007, personal communication) and is still considered rare throughout its range. The Wyoming Game and Fish Department (WGFD 2006) identifies the black-tailed prairie dog on its list of Species of Greatest Conservation Need because populations have declined and its habitat is vulnerable. However, there is no identified ongoing significant habitat loss in Wyoming. The black-tailed prairie dog is designated as vulnerable by the Committee on the Status of Endangered Wildlife in Canada and threatened by the Lista de las Especies Amerzadas, the official threatened and

endangered species list of the Mexican Government. In-depth information regarding the background and status of the black-tailed prairie dog is presented in the Service's finding for the resubmitted petition to list the black-tailed prairie dog as threatened (69 FR 51217, August 18, 2004). Information provided below is primarily from the Service's finding.

4.1.1 Natural History

The black-tailed prairie dog is one of five species of prairie dog, all of which occur only in North America. It is a small rodent that exhibits a colonial lifestyle, living in burrow systems within generally large, dense colonies. This lifestyle may represent the most complex social organization of all rodents and likely offers an effective defense mechanism against predators and increases reproductive success, though facilitating aiding in the transmission of disease.

Black-tailed prairie dogs are associated with grasslands and shrub-grasslands and, in Wyoming, appear most abundant on shortgrass prairies. Habitat requirements include fairly flat or smooth terrain with gentle slopes and little rock in the soil.

Towns, or colonies, are loosely defined as aggregations of prairie dogs, while colonies are further organized into "coteries" made up of 2 to 40 members (Hoogland 2006). Coterie members defend their group territory against intrusion by members of adjacent coteries. Biggins et al. (1993) define prairie dog complexes as prairie dog colonies within a 4.34 mile (7.0 km) radius of other prairie dog colonies. Typical dispersal between established colonies is 3 miles (4.8 km) or less. Black-tailed prairie dog densities vary depending upon season, region, and climatic conditions, but typically range from 2 to 18 individuals per acre (0.8 to 7.2 individuals per hectare).

Black-tailed prairie dogs are active above ground year round. Prairie dogs consume both grasses and forbs, and a majority of their diet may include plant species having value as livestock forage, such as western wheatgrass (*Pascopyrum smithii*), blue grama (*Bouteloua gracilis*), and needle-and-thread (*Stipa comata*). Utilization of vegetation by prairie dogs has been estimated at 18 to 37 percent, with most utilization affecting grasses and reaching as high as 80 percent by mid-August.

A female may produce up to 20 offspring during its lifetime, producing a single litter of 4 to 5 pups per year over a lifetime of 3 to 4 years. While not prolific in comparison to many other rodents, the species is capable of rapid population increases subsequent to substantial reductions.

4.1.2 Distribution

The historic range of the black-tailed prairie dog included portions of 11 states, Canada, and Mexico. Today, the range occurs from extreme south-central Canada to northeastern Mexico and from approximately the 98th meridian west to the Rocky Mountains. The species is currently present in 10 states (Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming), but has been extirpated from Arizona. Range contractions have occurred in the southwestern portion of the species' range in Arizona, western New Mexico, and western Texas; and in the eastern portion of the species' range in Kansas, Nebraska, Oklahoma, South Dakota and Texas. These range contractions are largely due to habitat loss through cropland development in the east (Luce 2003) and through conversion of grasslands to desert shrub lands in the southwest (Pidgeon et al. 2001).

The black-tailed prairie dog appears to be widely distributed throughout its historic range in Wyoming, generally in disconnected populations across the shortgrass prairie in the eastern half of the state. Luce (2003) estimated 125,000 acres (51,000 hectares) of black-tailed prairie dog occupied habitat statewide in 2003. More recent estimates by the Wyoming Game and Fish Department indicate 213,174 acres of black-tailed prairie dog colonies are present in Wyoming. Of that, 102,725 acres are part of black-tailed prairie dog colonies classified as healthy (>50% active; WGFD 2006). Sylvatic plague, caused by a bacterium (*Yersinia pestis*), has resulted in notable declines in the State's largest identified complex at the Thunder Basin National Grassland adjacent to the 4W Ranch. The population on the Cheyenne River was first described in 1862.

4.1.3 Factors Affecting the Species

4.1.3.1 The present or threatened destruction, modification, or curtailment of its habitat or range

Historically, as many as 100,000,000 acres of occupied black-tailed prairie dog habitat occurred across a landscape of approximately 400,000,000 acres of potential habitat, forming several large metapopulations in the United States. At present, there are an estimated 1,842,000 acres of occupied habitat in the United States. Habitat loss resulted from cropland development, urbanization and changes in vegetative communities, burrow deterioration, and fragmentation. For example, in the United States approximately 37% of the suitable habitat within the range of the black-tailed prairie dog has been converted to cropland. However, the 12-month finding noted that the current threat of habitat loss through cropland conversion is much less than in the early days of agricultural development in the Great Plains and that a considerable amount of potential unoccupied habitat remains.

When the amount of current occupied habitat is contrasted with the amount of remaining rangeland (potential habitat) it is evident that sufficient potential habitat still occurs in each of the 11 States within the historic range of the species to accommodate large expansions of black-tailed prairie dog populations. Therefore, the Service continues to support its previous conclusion that present or threatened habitat destruction is not a threat to the species, although considerable effects due to this factor have occurred in the past. Overall, recent state estimates illustrate far more occupied habitat than was previously assumed in the Service's 12-month finding. State agencies now estimate approximately 1,842,000 acres of habitat is occupied by black-tailed prairie dogs, as opposed to 768,000 occupied acres estimated in 2000 (USFWS 2000, 2004a).

4.1.3.2 Overutilization for commercial, recreational, scientific, or educational purposes

Effects due to collecting for scientific or educational purposes and commercial use of the species via the pet trade are not threats to the species. The Service is aware that recreational shooting can reduce black-tailed prairie dog population densities at specific sites, and acknowledge the possibility that extirpation may have occurred in isolated circumstances, but interest in recreational shooting is generally not high where populations are at low levels. Black-tailed prairie dog populations can recover following intensive recreational shooting (Reeve and Vosburgh 2006). Although recreational shooting has been implicated in affecting reproductive output in the short-term (Pauli and Buskirk 2007), there are no long-term studies that indicate that reproductive output will permanently reduce local populations. Therefore, the effects due to recreational shooting do not rise to the level of a threat pursuant to the definitions of the ESA. Statewide and range-wide population estimates further reinforce this conclusion, as occupied acreage of black-tailed prairie dogs appears to be stable (Luce 2003), even in states experiencing locally-significant shooting pressure.

4.1.3.3 Disease or predation

Although plague is likely the most important factor adversely influencing black-tailed prairie dog population dynamics, recent information indicates populations are responsive, re-populating plague-impacted colonies (Cully and Williams 2001). Cully and Williams (2001) indicate that: (1) high exposure doses of plague bacilli may be necessary for disease contraction in some individuals, (2) limited immune response has been observed in some individuals, (3) a population dynamic may have developed in low-density, isolated populations that contributes to the persistence of these populations, (4) the apparent ability of some sites to recover to pre-plague levels after a plague epizootic, and (5) approximately one-third of the species' historic range has not been affected by plague. The black-tailed prairie dog remains a relatively abundant species despite plague. Between

1961 and 2003, population estimates of black-tailed prairie dogs have shown the species to be stable to increasing across their range, even though plague has been active throughout their range during this time period. On the 4W Ranch, data collected on prairie dog densities following a plague outbreak in 2001 indicates an initial recovery period of 2 to 3 years, then an exponential increase in prairie dog numbers (Talon Environmental 2007).

The Service also concludes that effects on black-tailed prairie dog populations due to predation are not a threat to the persistence of the species. This conclusion is based on general information regarding predator-prey relationships, as well as specific examples of intensive raptor predation having no long-term effects on prairie dog populations (see discussion of predation on pages 61-62 of USFWS [2000] for additional information).

4.1.3.4 The inadequacy of existing regulatory mechanisms

There are many jurisdictional entities across the range of the black-tailed prairie dog regulations could theoretically affect the status of the species. Before an effect due to inadequate regulatory mechanisms can be considered a threat, the regulation or lack thereof must influence another factor considered a threat. For example, if recreational shooting is not considered a threat, regulations pertaining to recreational shooting cannot be considered a threat and there is no need to evaluate the adequacy of the regulations. However, the Service has evaluated the influences of existing regulations on recreation shooting, chemical control, and regulatory limitations that could preclude achieving management goals designed to ameliorate the influences of plague.

In Canada, only private landowners are permitted to shoot prairie dogs and chemical control is prohibited. In Mexico, there is no shooting and little chemical control. Within the United States, several states manage shooting of prairie dogs. Some states have significant restrictions on shooting, such as Colorado where the Division of Wildlife considers the black-tailed prairie dog a game species and the Colorado Division of Wildlife Commission prohibits sport hunting of the species year-round on public and private lands (USFWS 2004a). However, landowners and their designated agents in Colorado are allowed to shoot prairie dogs causing property damage. Several states have no restrictions on shooting, but do require a license for all prairie dog shooters or for non-residents. Only Montana and Wyoming require no license for, and have no restrictions on, shooting of black-tailed prairie dogs. The Service concludes that recreational shooting is not a threat to the continued persistence of the black-tailed prairie dog as a species (see discussion of shooting in Section 4.1.3.2). Therefore, regulatory mechanisms relating to recreational shooting are not problematic for the persistence of the species.

Some large black-tailed prairie dog population complexes have been severely impacted by chemical control programs in the recent past and could be again in the future if adequate regulatory mechanisms are not adopted. There remains a general absence of efforts by either State or Federal agencies to better monitor chemical control.

Collectively, these concerns regarding regulatory mechanisms will constrain black-tailed prairie dog management with regard to chemical control and disease, but are largely irrelevant due to the fact that distribution, abundance, and trends data indicate that inadequate regulatory mechanisms are not limiting black-tailed prairie dog populations at present. Therefore, we now conclude that these concerns do not rise to the level of a threat.

4.1.3.5 Other natural or manmade factors affecting its continued existence

We consider chemical control of black-tailed prairie dogs and synergistic effects from all threats under this factor. We have no information to indicate synergistic effects rise to the level of a threat. Historically chemical control of prairie dogs has been significant with more than 30,000,000 acres treated between 1937 and 1968. Since then, several effective toxicants used for prairie dog control were removed from the Market. Although prairie dog control has continued using other toxicants such as zinc phosphide, the success of control has been much less than historical efforts. Furthermore, site-specific and range-wide data indicate the species is resilient despite impacts from chemical control.

4.1.4 Conservation Planning Efforts

As mandated by the 1994 North American Agreement for Environmental Cooperation, the Commission for Environmental Cooperation has developed North American Conservation Action Plans (NACAP) for species of common concern, including the black-tailed prairie dog (CEC 2005a). This is part of a tri-national (Canada, Mexico, and the United States) endeavor for the conservation of these species. The NACAP expresses the joint tri-national commitment to conserve the species and outlines a cooperative agenda for implementing conservation actions. Implementation of the conservation actions is incumbent on various organizations and individuals in each country.

Representatives from each State wildlife agency within the historic range of the species continue to participate on the Prairie Dog Conservation Team. The Team has developed "A Multi-State Conservation Plan for the Black-tailed Prairie Dog, *Cynomys ludovicianus*, in the United States" (Luce 2003; Van Pelt 2007, personal communications). The purpose of this multi-state plan is to provide standards that the 11 States will use to implement management of the species. Goals include the development of management plans (and possibly umbrella Candidate

Conservation Agreements with Assurances (CCAA) between each State and the Service) that remove enough threats to the black-tailed prairie dog that long-term conservation of the species is assured. With that goal in mind, the Multi-State Conservation Plan lists the following minimum 10-year target objectives:

(1) Maintain at least the currently occupied acreage of black-tailed prairie dogs in the United States,

(2) Increase to at least 1,693,695 acres of occupied black-tailed prairie dog acreage in the United States by 2011,

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

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

(5) Maintain at least 10 percent of total occupied acreage in colonies or complexes greater than 1,000 acres by 2011, and

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

Representatives from many States have tentatively supported these objectives, as stated in various draft and final management plans (excepting Montana and North Dakota). However, we only considered these objectives if they were achieved by a particular state.

Colorado, Kansas, Montana, New Mexico, North Dakota, and Oklahoma have formally approved management plans. Four States with formally approved plans also accept the acreage objectives from the Multi-State Conservation Plan (Colorado, Kansas, New Mexico, and Oklahoma). Three of the four States (Colorado, Kansas, and Oklahoma) currently meet the acreage objectives. Management plans for Arizona, South Dakota, and Texas are in draft form. The Game Commission in Nebraska instructed its State wildlife agency to cease work on black-tailed prairie dog management plans. In Wyoming, prairie dog conservation has been incorporated into the draft "Plan for Bird and Mammal Species of Greatest Conservation Need in Eastern Wyoming Grasslands." This plan identifies strategies that the WGFD may implement to conserve healthy grassland ecosystems in Wyoming (WGFD 2006).

During the past few years some States and Tribes have made substantial progress in initiating management efforts for the black-tailed prairie dog, including (1) completing surveys to provide more accurate estimates of occupied habitat, (2) drafting management plans, (3) enacting laws that change the status of the species from pest to a designation that recognizes the need for special management, (4) establishing regulations that allow for better management of recreational shooting, and (5) setting future goals for occupied habitat that will address population management needs for disease and other threats (USFWS 2000, 2004a). However, there is also a failure by some States to formally approve management plans, a lack of acceptance by some States of 10-year occupied habitat objectives developed by the Prairie Dog Conservation Team, and the decision of some State Game Commission Boards to halt all work on management plans.

4.2 MOUNTAIN PLOVER

The mountain plover was proposed for listing as a threatened species in 1999. In September 2003, the Service withdrew the proposal, because new information indicated that the threats to the species included in the proposed listing were not as significant as earlier believed. The mountain plover is considered a bird of conservation concern at the national level (USFWS 2004b) and is classified as a sensitive species by Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management (USFS 2005; Carroll, 2007, personal communication). The WGFD (2006) identifies the mountain plover on its list of species of greatest conservation need as a Native Species of Special Concern based on (1) unknown, but suspected stable, population status and trends, (2) habitat vulnerability, and (3) sensitivity to human disturbance. In depth information regarding the background and status of the mountain plover is presented in the Service's withdrawal of the proposed rule to list the mountain plover as threatened (68 FR 53083: USFWS 2003). The following is a summary of information provided primarily from the Service's withdrawal.

4.2.3 Natural History

The mountain plover is a small bird (8 inches [20.3cm] in body length) similar in size and appearance to a killdeer, but lacking the contrasting dark breastbelt common to most plovers including the killdeer. Individuals can live up to 8 years of age, but the mean life span is approximately 1.9 years (Dinsmore 2001). Mountain plovers are insectivorous with beetles, grasshoppers, crickets, and ants as their principal food items.

The mountain plover is a migratory species of the shortgrass prairie and shrub-steppe eco-regions of the West. On the breeding range, the plover historically occurred on nearly denuded prairie dog colonies and in areas of major bison concentrations where vegetation was clipped short. Mountain plovers are usually

associated with sites that are modified by grazing and digging mammals, even on the wintering grounds. Breeding adults, nests, and chicks have been observed on cultivated lands in several states including Wyoming. The majority of mountain plovers winter in California, where they are found mostly on cultivated fields.

Nests are usually placed in areas where vegetation is less than 4 inches (10.2 cm) tall and the amount of bare ground exceeds 30 percent. Knopf (1996) identified that in shortgrass prairie habitat, vegetation associated with the nest sites includes blue grama, buffalo grass (*Buchloe dactyloides*), and prickly pear cactus (*Opuntia spp*.). Topography is typically flat or gently rolling (Parrish 1988). In areas where mountain plovers are associated with prairie dog colonies, size of the colony is important. In Montana mountain plover densities were highest on colonies 15-124 acres (6-50 ha), while colonies less than 25 acres (10 ha) were considered marginal habitat (Dechant et al. 1998).

Mountain plovers leave their wintering grounds in Mexico and Southern California by mid-February or March and arrive on the breeding grounds in Wyoming in March. They lay their eggs in June, and their young are on their own by July of the same year. Fledging rates appear low with 0.26 chicks per nesting attempt to 1.4 chicks per successful nesting attempt (Knopf 1996). Of these, only 0.17 to 0.74 chicks per nesting attempt live to migrate from the breeding grounds due to predation (Knopf 1996). The adults usually begin leaving for the wintering grounds in early August, arriving during mid-September to November. During migration, they can form flocks of hundreds of birds.

4.2.2 Distribution

Mountain plovers nest in the Rocky Mountains and Great Plains States from Montana south to Nuevo Leon, Mexico. Most breed in Montana, Wyoming, and Colorado. In Wyoming, breeding mountain plovers are known or suspected across the State, with nesting documented in the Thunder Basin in most years during surveys conducted between 1992 and 2002. The Breeding Bird Survey did not detect a trend for the mountain plover in Wyoming during 1966-2002; however, these data are uncertain given weaknesses in the BBS in monitoring species that occur at low densities, such as the mountain plover (WGFD 2006). The majority of mountain plovers winter in California, although there are some reports of wintering birds in Arizona, Texas, and Mexico.

4.2.3 Factors Affecting the Species

4.2.3.1 The present or threatened destruction, modification, or curtailment of its habitat or range

Historically, the conversion of grassland to cropland likely contributed to the decline of the mountain plover. However, the current threat of habitat loss through cropland conversion throughout the nesting range of the plover is much less than historically and the total lands converted are a small fraction of the total rangeland. Additionally, mountain plovers nest successfully on croplands in Colorado and perhaps contiguous states. Livestock grazing occurs throughout the nesting habitat of the mountain plover and often favors uniform cover, unlike historical grazing regimes that provided a mosaic of grasses, forbs, and bare ground for the species. The historical decline in abundance and distribution of prairie dogs likely contributed to the historic decline of the mountain plover. The mountain plover remains closely tied to active prairie dog colonies in the Thunder Basin area of Wyoming. Prairie dog density and colony size appear important to plovers and nesting success seems higher on active prairie dog colonies than areas without prairie dogs. Although much of the natural habitat in the mountain plover's wintering range has been lost (largely in California), the habitat loss does not seem to have limited plover populations. Therefore, the Service has found that habitat loss does not pose a significant threat to the mountain plover.

4.2.3.2 Overutilization for commercial, recreational, scientific, or educational purposes

There is no recent evidence that overutilization is a current threat.

4.2.3.3 Disease or predation

Disease-related factors are not known to be a direct threat to the species, although mountain plovers may be indirectly affected by habitat loss when sylvatic plague reduces numbers of prairie dogs in a colony. Predation influences the productivity of all ground-nesting birds, including the mountain plover. Mountain plover eggs and chicks are the most vulnerable to terrestrial and avian predation. Although nesting success may be affected locally in some years, it is not a persistent factor throughout the species' range.

4.2.3.4 The inadequacy of existing regulatory mechanisms

The Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, protects the mountain plover from direct mortality or destruction of active nests. Additionally, the Bureau of Land Management and Forest Service have policies directing that their actions not contribute to the declining status of a species. There are no State regulations mandating protection of the mountain plover on private lands, so most conservation actions on private lands are voluntary.

4.2.3.5 Other natural or manmade factors affecting its continued existence

Because mountain plovers congregate in large flocks on the wintering grounds, they may be more vulnerable to local catastrophic events there, although the likelihood of such an event is small. Control of grasshoppers and other pests on private lands may pose a threat to the mountain plover, although we do not believe that it is of a magnitude or immediacy that warrants listing the species. Additionally, mountain plovers may be exposed to pesticides and other chemicals while they occupy winter habitat in California. However, a review of exposure to various chemicals showed that concentrations were below thresholds that cause population-level effects.

4.2.4 Conservation Planning Efforts

In the last several years, Federal land management agencies and State and county governments have become more involved in mountain plover management. These efforts include the development of a mountain plover management strategy for the Pawnee National Grassland in Colorado; the Integrated Natural Resource Plan for Fort Carson, Colorado; the Rocky Mountain Bird Observatory's "Prairie Partners"; The Nature Conservancy's "Prairie Wings"; private land conservation efforts in South Park, Colorado; a management plan for the Carrizo Plain Natural Area in California; the "Multi-State Conservation Strategy for the Black-tailed Prairie Dog"; the "Shortgrass Prairie Partnership" in Nebraska; and three county-level Habitat Conservation Plans addressing the mountain plover in California. Although not all were designed to provide for the conservation of the mountain plover, the plover potentially benefits from these and other efforts.

4.3 BURROWING OWL

From 1994 until 1996 when the category was eliminated, the western burrowing owl was listed by the Service as a category 2 candidate species, indicating that more information was necessary to determine whether the species status was declining, stable, or improving. Although the burrowing owl is a not candidate species at this time, the burrowing owl is considered a bird of conservation concern at the national level by the Service (USFWS 2004b) and is classified by Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management as a sensitive species and by several state wildlife agencies as a Species of Concern (USFS 2005, USBLM 2002). The WGFD (2006) identifies the burrowing owl on its list of species of greatest conservation need as a Native Species of Special Concern based on (1) wide distribution, (2) unknown, but suspected stable, population status and trends, (3) habitat vulnerability, and (4) sensitivity to human disturbance. In depth information regarding the background and status of the burrowing owl is presented in two recent documents: a status assessment and conservation plan prepared by Klute et al. (2003) and a conservation assessment prepared by McDonald et al. (2004).

4.3.1 Natural History

The burrowing owl is a small, ground-dwelling owl with long legs, a round head with an oval facial ruff, and no ear tufts (Haug et al. 1993). The species is semi-colonial and uses open, treeless areas for nesting. Because short vegetative structure is important in allowing for detection of predators, burrowing owls are commonly found in association with cattle, prairie dogs, and other grazers (McDonald et al. 2004).

The species often nests in prairie dog burrows, as well as burrows dug by other animals such as badgers or foxes. Burrowing owls will use active and relatively inactive prairie dog colonies, but have been shown to experience lower rates of nest depredation and have higher rates of nesting success on larger, denser prairie dog colonies (Dechant et al. 2001). In northeastern Colorado, density of burrowing owls was correlated with active burrow density. In 26 of 27 colonies occupied by burrowing owls, at least 50 percent of the prairie dog burrows were active (Klute et al. 2003). In southeastern Colorado, burrowing owls occupied prairie dog colonies with 43 percent active burrows (Dechant et al. 1999). Habitat selection by burrowing owls was correlated with burrow length, high burrow density, low shrub cover, prairie dog activity, and closeness to water in the Thunder Basin (Lantz 2005).

Burrowing owls are opportunist feeders, consuming insects, small mammals (mice and voles), birds and other prey (Haug et al. 1993). Burrowing owls appear to prefer a vegetation mosaic with nesting habitat interspersed with taller vegetation for hunting (McDonald et al. 2004).

Those burrowing owls that nest in Canada and the northern Great Plains typically leave their wintering grounds in March and April, arriving on the northern breeding grounds as late as May. Wyoming burrowing owls typically arrive on the breeding grounds in late April (McDonald et al. 2004). Burrowing owls begin laying eggs in late March in the southern part of the range (northern Arizona and New Mexico), and mid-May in the north (southern Canada). In the Thunder Basin, nest initiation dates are typically between April 15 and June 1 (Lantz 2005). They produce only one brood per season with 7 to 9 eggs in an average clutch and between 1.6 and 4.9 young fledged per nest attempt (Haug et al. 1993). In Wyoming, an average of 3 young fledge per nest (McDonald et al. 2004). Northern birds leave for their wintering grounds by mid-October, while more southern birds remain year-round (Gillihan et al. 2001).

4.3.2 Distribution

The historical breeding range of the burrowing owl includes portions of southwestern Canada south through the non-forested portions of the western

United States (as far east as western Minnesota) and into central Mexico. The breeding range has contracted primarily on the eastern and northern edges, particularly in Manitoba, North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas. Burrowing owls generally winter from Mexico to El Salvador, but have been noted in lesser abundance in Arizona, California, Kansas, New Mexico, Oklahoma, Oregon, and Texas. Wyoming forms part of the core of the burrowing owl's breeding range, with owls widespread in grassland and shrub-steppe habitats and often associated with prairie dog colonies (Beauvais 2000a). In Wyoming, burrowing owls are at highest concentrations in the south and east, although the species has been documented in all of the State's latilongs, with confirmed or probable breeding in 24 of the 28 latilongs (WGFD 2006). However, the Thunder Basin National Grasslands had a relatively low percentage of black-tailed prairie dog colonies occupied by burrowing owls during surveys conducted during 1998, with only 16 percent occupied as compared to 55 percent occupied across all national grasslands included in the study (Sidle et al. 2001). The Breeding Bird Survey detected significant declines of burrowing owls in Wyoming during 1966-2002; however, these data are uncertain given weaknesses in the BBS in monitoring species that occur at low densities, such as the burrowing owl (WGFD 2006).

4.3.3 Factors Affecting the Species

4.3.3.1 The present or threatened destruction, modification, or curtailment of its habitat or range

Habitat loss and degradation is the single most important threat to persistence, mostly due to declines in prairie dog colonies and to land conversion for urban and agricultural uses (McDonald et al. 2004). Elimination of burrowing rodents through control programs has been identified as the primary factor in the recent and historical decline of burrowing owl populations (Deschant et al. 2001, Klute et al. 2003, McDonald et al. 2004).

4.3.3.2 Overutilization for commercial, recreational, scientific, or educational purposes

Although burrowing owls have been trapped and sold in Mexico (Klute et al. 2003), there is no evidence that overutilization is a current threat.

4.3.3.3 Disease or predation

Loss to predation in fragmented and/or urban landscapes where edge-loving and domestic predator densities are high has been identified as a threat to burrowing owls (Klute et al. 2003, McDonald et al. 2004). Additionally, indirect effects of sylvatic plague on burrowing owls that use prairie dog colonies has the potential

to significantly affect burrowing owls through loss of habitat and food sources (Klute et al. 2003, McDonald et al. 2004).

4.3.3.4 The inadequacy of existing regulatory mechanisms

The MBTA protects the burrowing owl from direct mortality or destruction of active nests. Additionally, the Bureau of Land Management and Forest Service have policies directing that their actions not contribute to the declining status of a species. There are no State regulations mandating protection of burrowing owls on private lands, so most conservation actions on private lands are voluntary. Burrowing owls are listed as endangered in Canada and threatened in Mexico.

4.3.3.5 Other natural or manmade factors affecting its continued existence

Insecticides and rodenticides can directly kill or reduce the growth and reproductive rates of owls in agricultural areas (Deschant et al. 2001, Klute et al. 2003, McDonald et al. 2004). Incidental shooting of burrowing owls as a byproduct of recreational shooting of prairie dogs has been documented, although it is not likely a significant threat (McDonald et al. 2004). Because burrowing owls do not appear to scavenge prairie dog carcasses, ingestion of lead fragments is not considered to be a threat to burrowing owls (Klute et al. 2003, McDonald et al. 2004). Collision with vehicles has been cited as a source of mortality, but the significance of this mortality is not known (Klute et al. 2003).

4.3.4 Conservation Planning Efforts

As mandated by the 1994 North American Agreement for Environmental Cooperation, the Commission for Environmental Cooperation has developed North American Conservation Action Plans (NACAP) for species of common concern, including the burrowing owl (CEC 2005b). This is part of a trinational (Canada, Mexico, and the United States) endeavor for the conservation of these species. The NACAP expresses the joint trinational commitment to conserve the species and outlines a cooperative agenda for implementing conservation actions. Implementation of the conservation actions is incumbent on various organizations and individuals in each country.

In California, the Burrowing Owl Consortium undertakes projects to help the burrowing owl, as well as preparing documents to assist with conservation (such as the 1993 Burrowing Owl Survey Protocol and Mitigation Guidelines). The Rocky Mountain Bird Observatory promotes conservation of shortgrass prairie birds and their habitat through effective stewardship through their "Prairie Partners" program and various publications. The New Mexico Burrowing Owl Working Group supports ongoing research projects and has initiated a monitoring system to collect data on burrowing owls in New Mexico.

In Canada, a burrowing owl recovery team was formed to coordinate and promote conservation of the burrowing owl. Various activities are occurring, including several outreach programs. In Manitoba, nearly 3,500 ha of habitat have been protected and artificial burrows have been installed.

4.4 FERRUGINOUS HAWK

From 1982 until 1996 when the category was eliminated, the ferruginous hawk was listed by the Service as a category 2 candidate species. The Service was petitioned to list the ferruginous hawk in 1991 and found listing was not warranted in 1992 (57 F.R. 37507). Although the ferruginous hawk is not a candidate species at this time, the ferruginous hawk is considered a bird of conservation concern at the national level by the Service (USFWS 2004b) and is classified as a sensitive species by Region 2 of the U.S. Forest Service and the Wyoming State Office of the Bureau of Land Management (USFS 2005, USBLM 2002). The WGFD (2006) identifies the ferruginous hawk on its list of species of greatest conservation need as a Native Species of Special Concern based on (1) wide distribution, (2) unknown, but suspected stable, population status and trends, (3) ongoing significant loss of habitat, and (4) sensitivity to human disturbance.

4.4.1 Natural History

The ferruginous hawk is a large, broad-winged hawk that nest in flat or rolling terrain in pinyon-juniper, shrublands, and grasslands of the western United States, but rarely nest in forests. Landscapes with less than 50 percent coverage of cropland and hayland are used for nesting and foraging (Dechant et al. 1999). Ferruginous hawks use a variety of nesting substrates, most commonly trees and large shrubs, followed by cliffs, utility structures, dirt outcrops, and relatively flat ground (Olendorff 1993, Bechard and Schmutz 1995, Dechant 2001). Historically, ground nesting was common (CEC 2005b). They typically build large nests of sticks, twigs and debris and often reuse nests for many years (Bechard and Schmutz 1995). In northeastern Wyoming, ferruginous hawks are opportunistic nesters, often selecting nest sites away from golden eagle nests (Phillips and Beske 1990). Territory and nest site re-occupancy is common for ferruginous hawks and territories often contain multiple alternate nests (Dechant et al. 1999).

Most breeding ferruginous hawks arrive in Wyoming in April and leave by September (Beauvais 2000b). Ferruginous hawks are easily disturbed during the breeding season, particularly during the early stages of nesting, and sensitivity to disturbance may be heightened during years of low prey abundance (Dechant et al. 1999). Average annual clutch size of ferruginous hawks varies from 2 to 4 eggs, but can range from 1 to 8 depending upon prey abundance. The mean

number of fledglings produced by a breeding pair each year ranges from 1.3 to 3.2 (Bechard and Schmutz 1995). Young typically leave the nest at 38 to 50 days of age, but remain dependent upon the parents for several weeks after fledging (Bechard and Schmutz 1995).

Ferruginous hawks eat primarily mammals, including rabbits, ground squirrels, prairie dogs, and pocket gophers. Generally, to the east of the Continental Divide the primary prey is prairie dogs and other ground squirrels (Bechard and Schmutz 1995). In southern Wyoming, MacLaren et al. (1988) found ferruginous hawks had the most diverse diet when compared to prairie falcons, golden eagles, and red tailed hawks. Ferruginous hawks took 37 percent ground squirrels, 22 percent prairie dogs, and 20 percent leporids. However, leporids actually contributed 48 percent of the biomass consumed as compared to 22 percent from prairie dogs and 16 percent from ground squirrels. Although ferruginous hawks may shift to other prey when their principal prey species declines, productivity is affected by densities of major prey species (Olendorff 1993).

4.4.2 Distribution

The ferruginous hawk breeding habitat includes western North America from southern Canada between the Great Plains and Rocky Mountains south to northern Arizona and New Mexico. Nesting generally occurs as far east as western South Dakota and western Nebraska and as far west as the Great Basin and Columbia River Basin regions. Wintering range includes primarily grassland and shrubsteppe habitats in northern California through portions of the southwest into northern Texas, New Mexico, Arizona, and portions of Colorado (Bechard and Schmutz 1995). In Wyoming, the ferruginous hawk is found statewide excluding the mountainous areas. It has been documented in all of the State's 28 latilongs, with confirmed or probable breeding in 25 of them (WGFD 2006). The Breeding Bird Survey did not detect a trend for the ferruginous hawk in Wyoming during 1966-2002; however, these data are uncertain given weaknesses in the BBS in monitoring species that occur at low densities, such as the ferruginous hawk (WGFD 2006).

4.4.3 Factors Affecting the Species

4.4.3.1 The present or threatened destruction, modification, or curtailment of its habitat or range

Population declines have been attributed to loss of habitat to cultivation, urbanization, grazing, control of small mammals, mining, and fire management, with cultivation the most significant (Olendorff 1993, Bechard and Schmutz 1995, Dechant et al. 1999). Several of the habitat effects are related to prey availability. For example, cultivation leads to replacement of short grasses by taller crops that

conceal prey items more effectively. Additionally, nest tree availability is adversely affected by cultivation and some grazing regimes. Olendorff (1993) asserted that grazing with improper stocking levels could also lead to adverse effects to prey items. However in the Thunder Basin, grazing benefits ferruginous hawks by reducing vegetative cover and making prey more visible (Kantrud and Kologiski 1983, Konrad and Gilmer 1986 as cited in USFS [2001]).

4.4.3.2 Overutilization for commercial, recreational, scientific, or educational purposes

There is no evidence that overutilization is a factor affecting the species. Eggs were once valuable to collectors, but most collecting occurred during the early 1900s, was not likely a key factor in declines, and no longer appears to be a threat (Bechard and Schmutz 1995). Collection for use in falconry is not a threat as ferruginous hawks are rarely used in falconry (CEC 2005c).

4.4.3.3 Disease or predation

There is no indication that disease is a factor affecting this species. There are few documented instances of nest predation, although ground predators (such as coyotes and badgers) may pose a threat to ground-nesting ferruginous hawks (Bechard and Schmutz 1995).

4.4.3.4 The inadequacy of existing regulatory mechanisms

The MBTA protects the ferruginous hawk from direct mortality or destruction of active nests. Typically Federal agencies provide some level of protection or special management to the ferruginous hawk because of its status as a raptor. Additionally, the U.S. Forest Service and Bureau of Land Management consider effects of their actions on the ferruginous hawk because of its designation as a sensitive species. In Canada, the ferruginous hawk was designated as threatened in 1980 and downgraded to vulnerable in 1995 by the Committee on the Status of Endangered Wildlife in Canada, Environment Canada.

4.4.3.5 Other natural or manmade factors affecting its continued existence

Poisoning and control of prey items (including prairie dogs) can produce local food shortages leading to interruptions in breeding, decreased productivity, and increased susceptibility of breeding ferruginous hawks to human disturbance (Olendorff 1993). Poisoning, with rodenticides such as zinc phosphide, is used to control rodent populations with minimal impacts to secondary consumers (Andelt 2006). However, there is considerable risk of secondary poisoning to non-target avian and mammalian predators and scavengers from the recently approved use of

anticoagulant rodenticides such as Rozol™ and Kaput™ for prairie dog control. It has been demonstrated that dosed prairie dogs have a longer persistence of the anticogulant in their tissue as well as a prolonged period of mortality in which the poisoned individuals may come above ground prior to death, thereby becoming prey that is readily available to non-target species for an extended period of time (Kim Dickerson, pers. comm.). Disturbance, such as that associated with mining, near nest sites can result in nest abandonment (Olendorff 1993, Behcard and Schmutz 1995). Bechard and Schmutz (1995) and Olendorff (1993) report reduced productivity of nests near active oil and gas wells, although Dechant et al. (1999) cite a study from Montana that reported no negative impacts on productivity as a result of petroleum development. Collisions with power lines and electrocutions result in occasional mortality of ferruginous hawks, but do not appear to pose a significant threat to the population (Olendorff 1993, Bechard and Schmutz 1995).

A recent study of lead shot retention in recreationally shot prairie dogs in the Thunder Basin found that 87 percent of prairie dogs shot with soft point (expanding) bullets contained detectable amounts of bullet fragments (Pauli and Buskirk 2007). Although the estimates were variable, on average, 228 mg of the lead bullet core remained in the carcass. Seventy-three percent of the lead fragments in the carcasses were small, each weighing less than 25 mg, which have potentially important implications for lead assimilation in secondary consumers, such as ferruginous hawks.

To address the potential risks, a risk assessment was performed, which considered a worst case scenario. The assessment concluded there is a potential threat from lead ingestion, but it did not consider several factors, including: the availability of other food sources (e.g., cottontail and jack rabbits), competition from other scavengers for shot prairie dogs, and the amount of shot prairie dogs consumed. See Section 7.4 for further details on the analysis (Page 32-36).

Predator-prey interactions often result in predators expending the least amount of effort for the maximum amount of forage (e.g., large prey such as lagomorph versus small prey such as prairie dogs). Olendorff 1993 reported that while the frequency of consumption of prairie dogs and ground squirrels is over 44%, the actual biomass consumed by ferruginous hawks is greater than 65% lagomorph. Considering the diversity and availability of prey items in this area, the large areas the hawks cover in their home ranges, the actual risk from lead ingestion and poisoning is likely minimal. However, the landowners have anticipated lead may be a potential threat and will require the use of nontoxic (e.g., copper) or non-expanding bullets for recreational shooters, to avoid the lead assimilation issue.

4.4.4 Conservation Planning Efforts

The North American Conservation Action Plan for the ferruginous hawk identifies conservation actions recommended for implementation by the United States, Canada, and Mexico and provides the following information regarding ongoing conservation efforts (CEC 2005c). In Canada, a national recovery plan has guided conservation actions, with current activities focused on maintaining habitat, studying population trends, and monitoring prey populations. On the wintering grounds in Mexico and the United States, research is ongoing to better delineate the distribution of wintering birds, delineate movement corridors, and understand survival and mortality factors. The Rocky Mountain Bird Observatory is implementing a project to educate landowners regarding the ferruginous hawk's ecological role and conservation needs. In Wyoming, Partners in Flight lists the ferruginous hawk as a "level 1 species" highlighting the need for conservation actions identified in its state plan.

4.5 DESCRIPTION OF EXISTING CONDITIONS WITHIN THE CCAA AREA

4.5.1 Species Distribution

4.5.1.1 Black-Tailed Prairie Dog

The population of this species within the boundary of the 4W Ranch has been estimated to number over 60,000 (Talon Environmental, pers. comm.). Casual observation indicates unmanaged colonies on the nearby Thunder Basin National Grasslands have lower densities, compared to colonies on the 4W Ranch (Talon Environmental, pers. comm.). The majority of the population occurs on the flats on the south side of the Cheyenne River. Since 1996, there was noticeable encroachment of new prairie dog colonies southward and up the slopes towards the rugged breaks approximately two to four miles south of the river. Movement was also occurring to the north side of the river. This expansion was taking prairie dogs into the riparian zone and associated hay fields.

The area along the Cheyenne River is, in many ways, different than other expansive prairie dog complexes, such as Custer State Park in South Dakota or Devil's Tower National Monument, where more precipitation occurs on an annual basis. In addition to difference in climatic conditions, soil and vegetation types shape prairie dog habitat. This requires careful monitoring and management of ranch operations. For example, the ground on the ranch can become very barren in August and September when prairie dogs consume much of the vegetation, and due to drought, colonies can be denuded of grasses across many acres. When this occurs, prairie dogs begin digging and consuming the roots of grasses, thus reducing the ability of the grasses to grow the following spring (Detling 2006),

which can impact not only the colonies themselves, but the economic viability of the ranch.

In the past, plague has caused a reduction in the black-tailed prairie dog population on the 4W Ranch. During August and September of 2001, it became evident that a plague outbreak was occurring on the ranch. Populations decreased immediately following the outbreak, but rebounded dramatically by 2004. In 2005, burrow density monitoring indicated that population thresholds were being exceeded in some management areas, so recreational shooting was implemented on a limited basis. Plague struck again during the late summer of 2006, driving the number of prairie dogs below the 2002 post-plague estimates, and all recreational shooting was suspended, pending a return of the population to threshold levels.

4.5.1.2 Mountain Plover

Mountain plovers have been observed summering and nesting on the 4W Ranch. Although breeding habitat range-wide may have experienced a decline, habitat for these birds is likely not limiting on the ranch, as long as prairie dog habitat can be conserved. Since 1999, data on the mountain plover have been gathered to assess the resident population and its distribution within the boundaries of the ranch. Previous to the 2001 baseline data collections, recreational prairie dog shooters watching for the plover reported two to five sightings a year, with some years recording zero observations. These reports corroborated other anecdotal observations that plovers were wide spread across the ranch's prairie dog colonies. Mountain plovers are generally observed from May through June by ranch personnel and shooters, with 34, 76, and 36 birds observed in 1999, 2000, and 2001, respectively. During 2001, ranch personnel observed one pair of plovers that raised young. No mountain plovers have been observed since 2001, likely due to lack of prairie dog activity since the outbreak of sylvatic plague; however, monitoring efforts are on-going and ranch personnel and shooters are advised to report any sightings.

4.5.1.4 Burrowing Owl

Burrowing owls summer and nest on the 4W Ranch FLP. While burrowing owls are only occasionally observed, they are widely dispersed across the ranch. In 1999, there were 12 birds observed from June through August by ranch personnel and shooters. In 2000, 15 sightings were reported, while only 1 sighting was reported by ranch personnel during 2001. High densities of burrowing owls are not expected here, as the density of active prairie dog burrows has always been at

the low end of the range favorable to burrowing owls. Burrowing owls do not appear to be using the colonies since the plague outbreak in 2001 and its consequences on the prairie dog population in the area.

4.5.1.4 Ferruginous Hawk

The ferruginous hawk is a common summer resident in Wyoming. Although the ferruginous hawk is known to nest in the Thunder Basin, the majority of nest sites are located in southern Wyoming, particularly in Carbon and Sweetwater counties (WGFD 2006). During a 1992 survey of the vicinity of Thunder Basin National Grasslands, 294 ferruginous hawk nests were located and mapped representing 184 potential territories, 52 of which were occupied (Beske 1992). Of the 294 nests, 33 were active and 26 were successful in raising a total of 64 young (Beske 1992). Based on the 1992 survey, the 2 active nests closest to the 4W Ranch prairie dog colonies were more than 10 miles away (see Appendix B in Beske 1992). While there are no known nests on the 4W Ranch, observations of the ferruginous hawk has increased in the ranch area over the last decade (Talon Environmental 2007).

Habitat and food are not currently limiting for the ferruginous hawks on the 4W Ranch. Ferruginous hawks are observed daily soaring over much of the 4W Ranch, both over the prairie dog colonies and other areas of the ranch with no prairie dogs. Since the hatching of ferruginous hawk young coincides with the emergence of the young prairie dog pups, which are a primary prey item fed to newborn chicks, the adult birds spend more of their foraging time in the prairie dog management areas. Although suitable nesting habitat occurs on the ranch (trees in riparian areas and rock outcroppings), an intensive survey for raptors has yielded no evidence of ferruginous hawk nesting. Artificial nesting structures have been provided since 1997, but remain unused. Those ferruginous hawks seen foraging in prairie dog colonies and other areas of the ranch likely do not forage exclusively on the 4W Ranch, but rather also forage in other portions of their home ranges.

4.5.2 Ranch Management

The spatial distribution of the three major habitat types on the 4W Ranch lends itself well to the management goals outlined for the ranch. Because these habitats are distinct in their vegetative species composition, soil types, and moisture regimes, they are managed as separate entities. This in turn allows for active management of prairie dogs to confine them to their management areas on the short grass benches. In return, the 4W Ranch, their livestock, and other wildlife on the ranch may benefit from:

- Exclusion of prairie dogs from agricultural areas. This maintains the necessary dry land hay production that is essential for the winter feeding of cattle.

- On a landscape-level scale, where prairie dog colonies are separated by enough distance, there may be less likelihood of plague transmission between colonies. Cully and Williams (2001) state "In the presence of plague, black-tailed prairie dogs will probably survive in complexes of small colonies that are usually >3 km from their nearest neighbor colonies". By managing for a discontinuous prairie dog population on the ranch, outbreaks of sylvatic plague may be reduced.

- Protection of upland mesic and riparian areas, which are critical for early brood-rearing sage-grouse. These habitats are maintained by preventing prairie dog colonization.

- Maintaining and enhancing range conditions in prairie dog management areas, which may improve habitat for mountain plover, burrowing owl and ferruginous hawks.

It is the intent of the 4W Ranch upon entering into this CCAA to remain secure within its property and its individual rights without overburdening interference from government (See Section 8. Assurances Provided, page 39 and Section 9. Assurances Provided to Property Owner in Case of Changed or Unforeseen Circumstances, pages 40-41).

5. CONSERVATION MEASURES

5.1 PROPERTY OWNER

The following conservation measures will begin immediately, as most represent continuation of ongoing ranch management practices:

5.1.1 Conservation Measures for All Species

5.1.1.1 Manage black-tailed prairie dogs to maintain a viable and self-sustaining population

The 4W Ranch's prairie dog population will be considered viable and self-sustaining if colonies are continuing to expand across the 3,000 acre (1,214 hectare) core management area; the active burrow density is at least 10 burrows per acre (25 burrows per hectare); and the active:inactive burrow ratio on the active portions of colonies remains at or above 0.40:1.00. Prairie dog colonies subject to management include those found in Township 41 North, Range 67

West: Sections 13-15, 22-27, and 34-36; Township 41 North, Range 66 West: Sections 19-21, 28-31; and, Township 40 North, Range 67 West: Section 3 (Figure 1 and Table 1). Prairie dog management actions will focus on regulating harvest effort by managing recreational shooters (Caughley and Sinclair 1994) combined with a population threshold (Lande et al. 1997); increasing shooting pressure when thresholds are exceeded and eliminating shooting pressure when the population falls below the threshold. Shooter management may include changing the number or timing of shooter days (i.e., effectively limiting the number of shooters) to achieve population goals (Reeve and Vosburgh 2006). Controlled recreational shooting reduces encroachment into hay meadows and other livestock high value forage areas.

When thresholds are exceeded, prairie dog population management will be conducted primarily via recreational shooting in designated management areas from no earlier than May 15 through no later than September 15 each year. Shooters will be rotated to a different prairie dog management area each day. Groups of shooters will be scheduled from three to five days, with no more than six shooters per group; one-day and drive-in shooters are not allowed. All shooters are required to room-and-board at the facilities of the 4W Ranch. The 4W encourages their clients to report wildlife observations, and requires reporting of daily harvest numbers, which are logged to determine harvest levels in prairie dog populations throughout the season.

Annual monitoring will track the population response on the core management area (Talon Environmental 2007), and is based on determining active burrow density (Biggins et al. 1989; Shaw et al. 1993), which gives an index of prairie dog population level (Johnson and Collinge 2003; Biggins et al. 2006). Using methodology described in Shaw et al. (1993), the prairie dog density will be estimated using 0.31625 black-tailed prairie dogs per active burrow. Populations will be managed if they exceed a threshold level of over 10 active burrows per acre which is approximately 3 prairie dogs per acre (>26 active burrows per hectare; >4.7 prairie dog per hectare) with a minimum of 0.40:1.00 active:inactive burrow ratio, for each management area. Prairie dog population estimates are typically based on the amount of occupied habitat, and not on the number of individuals. The defined threshold is within the range reported for prairie dog densities (2-18 prairie dogs per acre; 5-45 prairie dogs per hectare), which can vary substantially both spatially and temporally (USFWS 2000). These values represent a population level considered adequate to sustain a viable population, while allowing for growth. This assumption is based on the known response of prairie dog populations on the 4W Ranch to controlled recreation shooting that has occurred since 1991 (Talon Environmental 2007), and a study by Reeve and Vosburgh (2006), who determined that harvesting 25% of a black-tailed prairie dog population posed “no risk of extinction”. Others have found that a 25-30 percent reduction in prairie dog abundance should be sustainable (Pauli, 2005,

personal communication; Vosburgh and Irby 1998), while limiting colony expansion (Knowles 1987; Vosburgh and Irby 1998). Therefore, this level of harvest should be low enough to account for maintenance of a prairie dog population.

Recreational shooting will not occur unless monitoring indicates the population threshold has been exceeded. Additionally, ongoing monitoring and adaptive management will allow adjustment of management goals and thresholds should new information indicate populations are decreasing or increasing outside the threshold parameters.

Generally, the threat of plague is not within the landowner's ability to control, although management for a discontinuous, moderately dense prairie dog population may help limit the spread of plague (Cully and Williams 2001).

A practical and common practice in Wyoming, but not a preferred alternative, would be to poison out all remaining prairie dogs, while the population is at a low level following a plague event. Poisoning following plague may effectively eliminate the entire prairie dog population, since plague can induce mortality in up to 99% of a complex (Cully et al. 2006). However, the landowner has not elected to eliminate prairie dogs from the ranch. This CCAA provides a commitment to maintain 3,000 acres of deeded lands of the 4W Ranch for prairie dogs, addressing the threat of habitat loss for this species.

The landowner's participation in the CCAA provides for a regulatory mechanism for protection of the prairie dog. The commitment to monitor the effects of shooting and make adjustments as needed addresses the threat of overutilization for recreational purposes. Additionally, the use of any other control methods of prairie dogs will only be undertaken on 370 acres encompassed in the CCAA, if at all, greatly minimizing any threat from unregulated control (e.g., chemical).

5.1.1.2 Enhance desirable vegetation and control undesirable vegetation

Past rangeland enhancement projects have shown that light ground disturbing activities immediately enhance the native vegetation (Emme and Murray 2007; Talon Environmental 2007) and do not hinder the prairie dog, but induce the rebuilding of the leveled mounds in conjunction with building new mounds. Rangeland enhancement projects will include prickly pear control by blading the infested areas and windrowing the prickly pear, spring tooth harrowing and aerating the range, reseeding, as well as other projects.

Livestock grazing is the primary function and use of 4W Ranch lands (Harshbarger 2001). The ranch is a cow/calf operation, running between 400 and 450 cows and producing 375 to 425 calves annually. A rotational grazing strategy

was developed and implemented by the Sherwin family since purchasing the ranch in 1924 that has allowed the continuation of the livestock operation through today, while benefiting the species covered by this CCAA. This stewardship has maintained habitat for multiple species, allows for management of the rangeland forage, preventing overgrazing, while providing wildlife forage. In limited areas, 20 to 50 acres of habitat manipulation occurs annually, which has encouraged growth of native grasses in prairie dog management areas where Russian thistle (*Salsola spp.*) and other weeds have become established.

5.1.1.3 Increase the habitat of the burrowing owl and mountain plover, and ferruginous hawk

This will be accomplished by allowing expansion of prairie dogs to 3,000 acres (1,214 hectares); maintaining total burrow density of at least 10 active burrows per acre (25 active burrows per hectare); and maintaining active:inactive burrow densities of at least 0.40:1.00.

5.1.1.4 Minimize incidental take

Continue to educate and manage shooters to avoid unwanted take of species. Ninety-five percent of the 4W Ranch clientele are returning customers. Additionally, beginning with the first shooting season after signing of this CCAA, shooters will be managed to preclude disturbance within 0.25-mile of any active mountain plover nests, and 0.50-mile for any ferruginous hawk nests.

5.1.2 Species-Specific Conservation Measures

5.1.2.1 Mountain plover

The Landowner's commitment to maintain 3,000 acres of prairie dogs provides for maintenance of mountain plover habitat, and reduces the threat of habitat loss. Participation in the CCAA provides for a regulatory mechanism for protection of the mountain plover. Precluding disturbance from April 10 through July 10 within 0.25-mile of active mountain plover nests will minimize the likelihood of nest abandonment resulting from human presence close to nests. Additionally, data gained through monitoring associated with this CCAA may assist in an overall understanding of mountain plover distribution and population dynamics.

5.1.2.2 Burrowing owl

Habitat loss and degradation has been identified as the most important threat to the burrowing owls' persistence, and elimination of burrowing rodents has been identified as the primary factor in current and historic population declines. The

landowner's commitment to maintain 3,000 acres of prairie dogs adequately addresses the threat of habitat loss. Incidental shooting of burrowing owls is addressed through the Ranch's education program, while landowner participation in the CCAA provides for a regulatory mechanism for protection of the species. Additionally, data gained through monitoring associated with this CCAA may assist in an overall understanding of burrowing owl distribution and population dynamics.

5.1.2.3 Ferruginous hawk

The most significant threats to the ferruginous hawk are habitat loss and food shortage, associated with control of prey species (e.g., prairie dogs). Olendorff (1993) reiterates that 3 of the most important conservation measures for protecting ferruginous hawks are to: (1) enhance nest substrates, (2) maintain prey populations, and (3) mitigate development impacts (e.g., reduce conversion of rangeland to agricultural fields). In addition to the recommendations for enhancing nest substrates are measures to protect potential nest sites, should nesting sites be identified. From March 15 through July 15, a 0.5-mile no disturbance buffer will be established around any active nests. Maintenance of prey populations is addressed through the commitment to maintain 3,000 acres of prairie dogs. The 4W Ranch will phase out the use of lead bullets for existing clients, and require new shooters to use nontoxic (e.g., copper) and non-expanding bullets, which address the potential threat of lead assimilation. Finally, no additional conversion of rangeland to cropland will occur, which will protect not only foraging habitat, but also any potential nesting habitat.

5.2 SERVICE

The Service agrees to provide technical assistance in the CCAA and permit application development.

6. EXPECTED BENEFITS

The Service expects the above described Conservation Measures, when implemented, will provide the following benefits to the black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk on the property encompassed by this Agreement:

- Approximately 3,000 acres (1,214 hectares) of 4W Ranch deeded land will be available as habitat for the use of the black-tailed prairie dog. Each management area will be managed to sustain at least 10 active burrows per acre (25 active burrows per hectare) and an active:inactive burrow ratio of 0.40:1.00, which should maintain viability of the prairie dog population.

- While approximately 3,000 acres will be made available for the benefit of the black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk, 370 acres are required to maintain ranch viability (e.g., hay production). These acres are tied to the 3,000 acres to allow management activities to exclude the black-tailed prairie dog and maintain these acres in their current agricultural status. Without these important hay and forage areas, the ranch may not sustain itself economically.

- Habitat suitable for mountain plover will expand as the prairie dog colonies expand toward 3,000 acres and prairie dog density increases. Management will preclude disturbance within 0.25-mile (0.4 km) of active mountain plover nests from April 10 through July 10.

- Habitat suitable for burrowing owl use will expand as the prairie dog colonies expand toward 3,000 acres, and prairie dog densities increase.

- Ferruginous hawks will benefit as their prey base increases in association with increased acreage and density of prairie dogs, and if nesting occurs, they will be protected with a 0.5-mile (0.8 km) no disturbance buffer from March 15 through July 15.

- Additional habitat improvements (e.g., re-seeding, reducing noxious weed infestations) will increase habitat quality, and enhance the 4W Ranch ecosystem.

The Service has determined that the benefits of the specific conservation measures described in this Agreement, when combined with those benefits that would be achieved if it is assumed that similar conservation measures were also implemented on other necessary properties would preclude or remove any need to list the black-tailed prairie dog, mountain plover, burrowing owl or the ferruginous hawk under the ESA. "Other necessary properties" are other properties on which the conservation measures would need to be implemented in order to preclude or remove any need to list the black-tailed prairie dog, mountain plover, burrowing owl, and ferruginous hawk.

7. LEVEL/TYPE OF TAKE/IMPACTS

The Service recognizes that the level of take outlined for the following species is consistent with the overall goal of precluding the need to list the species, and that if the Conservation Measures were implemented on other necessary properties, there would be no need to list the species.

Current regulations authorize the issuance of permits for otherwise prohibited

activities (e.g., take, import, export, interstate and foreign commerce) in order to enhance the propagation or survival of a listed species. For CCAAs, the respective policy and regulations (50 CFR 17.22(d) and 17.32(d)) provide only for the associated enhancement of survival permits to authorize incidental take. However, the Service recognizes that in some limited circumstances it may be appropriate to permit limited intentional taking of species in order to achieve conservation benefits (50 CFR 17.22(a) and 17.32(a)). The Service will issue an enhancement-of-survival permit for intentional take in association with a CCAA only when we determine that all of the requirements of the CCAA policy are met.

7.1 BLACK-TAILED PRAIRIE DOG

In order for the landowner to agree to ensure the long-term conservation of the black-tailed prairie dog, the population must be managed at a level that assures that the forage base of the rangeland meets the grazing requirements of the 4W's livestock and wildlife within the core management area. Managing the prairie dog population at or near the agreed threshold limits within the core area assures the economic viability of the 4W Ranch, while maintaining a population that will be viable and self sustaining, which will also enhance the ecosystem of the core area. The Service has determined that authorizing the direct take of black-tailed prairie dogs as part of a comprehensive monitoring and management program will enhance the survival of the species. Therefore, the Service is authorizing take of black-tailed prairie dogs. The take in compliance with this CCAA includes controlled shooting in management areas when populations are above established thresholds. This take includes lethal and non-lethal take (e.g., changes in behavior and other factors that may affect survival or reproduction [Pauli and Buskirk 2007]). In addition, the Service authorizes additional lethal take of black-tailed prairie dogs on the 370 acres designated as important ranch production areas outside of the core management areas.

Take will occur in the form of lethal mortality, while harassment from shooting has the potential to impact reproduction. Take from lethal mortality will be from two sources: (1) recreational shooting within the 3,000 acres defined as the core area, and (2) removal of prairie dogs that have moved into important livestock management areas such as hay meadows on the designated 370 acres. Take through harassment, could occur as a result of recreational shooting impacts on survivor's body condition (Pauli and Buskirk 2007). However, we do not expect this to occur since data from the past 7 years on the ranch indicates that even with controlled recreational shooting, populations can increase (Figure 2; Talon Environmental 2007).

In order for the 4W Ranch to agree to ensure the long-term conservation of the black-tailed prairie dog, the landowner must be able to manage the prairie dog population. The 4W Ranch, in order to remain a viable economic agricultural

unit, is committed to manage the core management area (CMA) as part of a sustainable grassland agriculture program. This means managing the unit so that the forage needs of livestock, other grazing wildlife (i.e., deer, antelope, and elk) as well as the prairie dogs are met (collectively forage use objectives). To ensure the long-term conservation of the prairie dogs, management objectives will include maintaining both the productivity of the prairie dog population and maintaining an evenly distributed population throughout the 3,000 acres of the CMA.

When the prairie dog population reaches a threshold level in any individual MA, population management can be initiated in order to maintain the forage use objectives for the MA and to keep prairie dogs from expanding outside of the core management area. The primary form of this control would be closely regulated recreational shooting in management areas when populations are at or above established thresholds (i.e., at or above 10 active burrows per acre and a ratio of 0.40:1.00 active:inactive burrows).

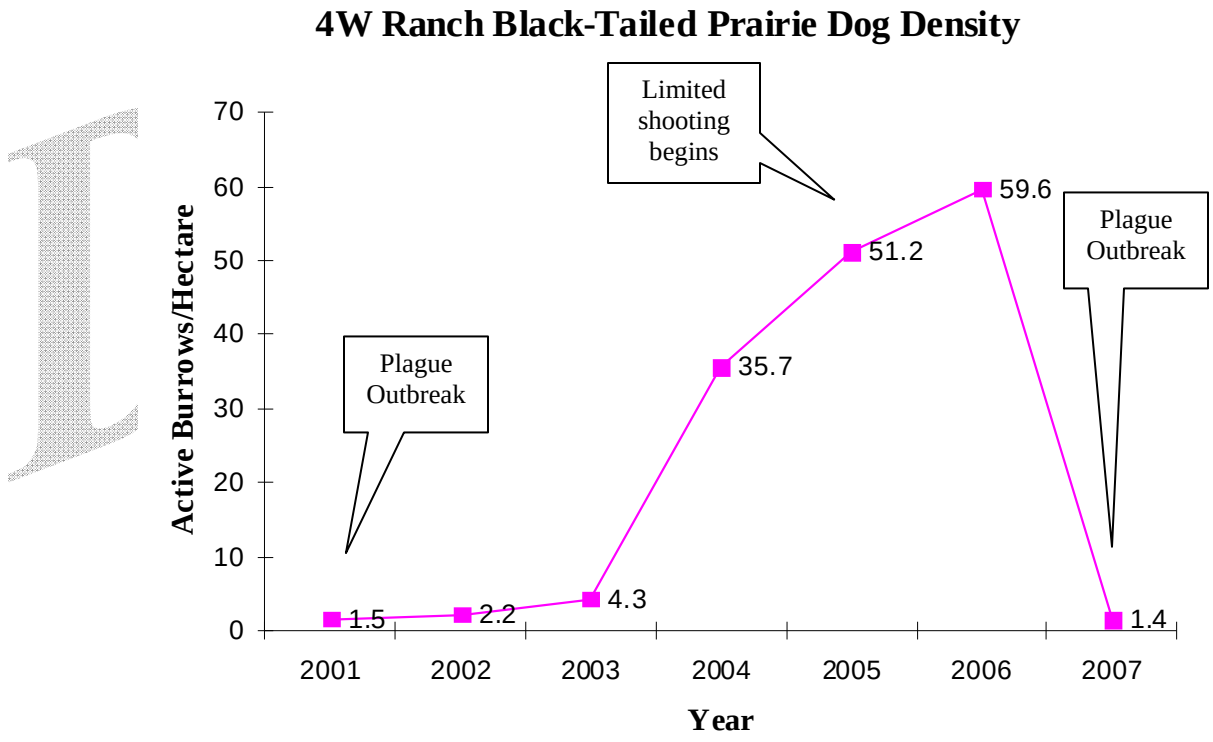

Figure 2. Black-tailed Prairie Dog density (based on average number of active burrows per hectare) on the 4W Ranch, 2001-2007 (Talon Environmental 2007).

An adaptive, outcome-based approach (Walters 1986) will be used for determining population management take. Such an adaptive approach for allowing management take of prairie dogs explicitly recognizes that multiple

factors (environmental conditions, biological processes, etc.) will affect the prairie dog populations on the 3,000 acres of the CMA. Furthermore, the consequences of establishing a specific management level of take cannot be predicted with certainty, and therefore the CCAA provides a framework for making objective decisions in the face of that uncertainty. Thus, adaptive management relies on an iterative cycle of monitoring, assessment, and decision making to clarify the relationships among the management level of take and prairie dog abundance.

Population management of the prairie dog for each succeeding year involves an iterative process:

(1) The density of active burrows within each MA from the current and previous years in conjunction with the latest data on spatial occupancy within MA's across the CMA, will be evaluated.

(2) Harvest from previous years will be evaluated to determine the degree to which the level of take authorized was successful in achieving the management goals. The methodology used to determine the annual allowable take will be revised to reflect the degree of success of achieving the management goals.

(3) An explicit management goal for the next year will be established for each MA. For any harvest (take) to begin, any one of the following may be considered a reason to initiate population control (take) in any individual MA: (a) the threshold burrow density has been met in an individual MA, (b) habitat deterioration has started i.e., over grazing and denuding of the rangeland by the prairie dog, or (c) there is the need to keep the population from expanding outside of a MA and /or the CMA onto neighboring private lands.

(4) The level of authorized population control (managed take) will be set based on the explicit management goals for each MA. In cooperation with the 4W Ranch after reviewing current monitoring data and prior to any shooting, the Service will consult and coordinate with the 4W Ranch, specifying what population management take will be approved for the next year within any MA of the CMA.

(5) The number of animals taken will be monitored during the shooting season. These parameters are required by the monitoring protocols (see Section 12. Biological Monitoring) and will be used in addition to density estimates to assist in reaching population management goals.

(6) Annual monitoring results will be used to determine if the extent of areas occupied within the CMA are expanding or contracting, and will assist in determining which level of take is authorized for the following year.

This approach "evolves" to account for new knowledge generated by a comparison of population goals, harvest levels (allowable take), and observed population trends.

Portions of Unk's pasture, the East Meadow, the Runway Meadow and East Cottonwood pastures are used for production of hay, and also provide important forage for livestock (Figure 1). Although unlikely, if management methods fail to confine prairie dog populations within the core management area, we assume they would move into these acreages and could potentially achieve a density of up to 6 prairie dogs per acre. Therefore, we expect an annual take of up to 6 prairie dogs per acre on 370 acres (2,220 prairie dogs) from removal efforts. While all federal and state-approved removal efforts will be considered, specific removal methods will be reviewed and coordinated with the Service.

Pauli (2005) found reduced foraging and above-ground activity that precipitated decreases in the body condition of surviving prairie dogs (35% lower in individuals on recreationally shot colonies than control colonies). While the 35% lower body condition would not directly translate into 35% mortality, under severe environmental conditions there may be some level of reduced overwinter survival. In their study, Pauli and Buskirk (2007) reported that reproductive output fell 82 percent on prairie dog colonies impacted by recreational shooting. Based on those results, if female prairie dogs on the 4W Ranch whelped an average of 5 pups per year, the reduction in reproductive output would be approximately 4 (5 pups X 0.82 = ~1), resulting in only 1 pup per year. This would directly impact overall colony growth, while additional harvest would be minimal to none since falling reproductive output would not allow the population to exceed thresholds where shooting would be allowed. However, data collected from 2001-2007 on the 4W Ranch (Talon Environmental 2007) indicates that populations increase even with moderate shooting pressure (Figure 2); these results are further supported by Reeve and Vosburgh (2006). Therefore, no additional declines in population are expected from recreational shooting stressors since populations will only be impacted if they surpass threshold levels.

7.2 MOUNTAIN PLOVER

There is a very limited possibility of lethal take of mountain plovers as a result of management actions on the 3,000 acres. Due to the education of shooters and quality of optics used by shooters, any take would be accidental and likely to result in only one mountain plover through the life of this CCAA.

7.3 BURROWING OWL

There is a very limited possibility of direct lethal take of burrowing owls as a result of management actions on the 3,000 acres. Due to the education of shooters and quality of optics used by shooters, any take would be accidental and likely to result in only one burrowing owl through the life of this CCAA.

7.4 FERRUGINOUS HAWK

There is a very limited possibility of direct lethal take of ferruginous hawks as a result of management actions on the 3,000 acres. Due to the education of shooters and quality of optics used by shooters, any take would be accidental and likely to result in only one ferruginous hawk through the life of this CCAA.

There is also a possibility of harassment of ferruginous hawks from their consumption of recreationally shot prairie dogs. A risk assessment using data from Pauli and Buskirk (2006) was performed to examine the potential impacts on ferruginous hawks from consuming lead found in recreationally shot prairie dogs (Ramirez 2006). Using "worst case scenario" assumptions, such as the hawks feed almost exclusively on shot prairie dogs, that 87% of all shot prairie dogs contain 223.8 mg of lead, and hawks consume up to 85% of the carcass and absorb a lethal dose of lead, results indicated that potentially two ferruginous hawks with home ranges covering the 4W Ranch exclusively would be at risk of lead poisoning. Since there are no nesting sites documented on the 4W Ranch, additional hawks are assumed would use the area for foraging, potentially exposing up to five hawks to lead ingestion.

In the risk assessment:

Dose = [(Lead mg/kg (amount of lead available for ingestion) X food ingestion rate (kg/d) X fraction of food with Lead) / (Body weight hawk (kg)] X Area use factor

However, this equation does not consider other variables that directly impact the actual *availability* of lead to hawks. For example, the actual amount of a carcass consumed by hawks may be lower than that indicated in risk assessments. The dose equation was refined, using data from Pauli and Buskirk (2007):

- A mean of 223.8 mg of lead per shot prairie dog,
- 87% of shot prairie dogs contained bullet fragments, and
- 73% of lead mass in shot prairie dogs weighed < 25 mg, and will be fully ingested.

In addition to those data, several additional assumptions were made:

- 80% of the carcass is consumed,
- 50% of the biomass in a hawk's diet is composed of shot prairie dogs,
- 50% of shot prairie dogs are available to hawks, and have not been eaten by other scavengers,
- 0.34 kg/day is the average ingestion rate for an adult ferruginous hawk, and that ingestion rate equals lead assimilation rate,

- 1.1 kg is the average weight of a male ferruginous hawk in this area, and
- Since the nearest known ferruginous hawk nest is over 10 miles from the 4W Ranch, hawks use the CCAA area for 25% of their foraging.

Example of Dose Calculation considering these data and assumptions:

Dose = [((223.8 mg X 0.87 (amount of PDs with lead) X 0.73 (amount of lead mass fully ingested) X 0.80 (amount of carcass consumed) X 0.50 (amount of BTPD biomass in diet) X 0.50 (availability of shot BTPD) X 0.34 kg/day (average ingestion rate)) / (1.1 kg (average weight of male FH))] X 0.25 (area used for 25% of foraging) = 2.2 mg/kg/day

Considering the actual availability of lead to ferruginous hawks drops the dose from a "worst case scenario" estimate of > 81 mg/kg/day to < 3 mg/kg/day. However, the dose must also be considered in the context of a "hazard quotient" (i.e., a level known to cause adverse effects). To calculate the hazard quotient, a "toxicity reference value" (TRV) must be determined. Since no experimental or field toxicity data were available for the ferruginous hawk, toxicity data for the red-tailed hawk (*Buteo jamaicensis*) was used a surrogate. We calculated the TRV for two values:

1) the No Observable Adverse Effect Level (NOAEL) or the highest tested dose of a substance that has been reported to have no adverse effects on a specific animal, based on 0.3 mg/kg/day, and

2) the Lowest Observable Adverse Effect Level (LOAEL) or the lowest concentration of a substance, determined by toxicity studies, which causes adverse effects (e.g., morphological changes, altered growth, development), based on 3.0 mg/kg/day.

To calculate the hazard quotient for the NOAEL and the LOAEL, the following equations were used:

Hazard Quotient (HQ) = Dose / TRV (NOAEL) or TRV (LOAEL)

HQ for TRV (NOAEL) = 2.2 mg/kg / 0.3 mg/kg/day = 7.3

HQ for TRV (LOAEL) = 2.2 mg/kg / 3.0 mg/kg/day = 0.7

The HQ is a comparison of the calculated dose to a reference dose. Reference values for HQ for TRV (NOAEL) range from 7 to 270, while HQ for TRV (LOAEL) range from 0.7 to 27. An HQ for TRV (NOAEL) >1 and TRV

(LOAEL) <1 indicates that there is uncertainty that the contaminant (i.e., lead) could cause adverse effects.

Stephens et al. (2005) found no detectable levels of lead poisoning in ferruginous hawk nestlings near prairie dog colonies in the Thunder Basin where shooting was allowed. When available, the ferruginous hawk's main food source in this portion of the Thunder Basin is "an-almost-exclusive diet of shooter-killed prairie dogs" (Stephens et al. 2005). If a significant portion of the diet was shot prairie dogs and lead was a major component to be ingested, high levels of lead should have been found in the nestlings. The study reports "that lead poisoning was not occurring in raptors in Thunder Basin", but that results could be misinterpreted because plague had depressed prairie dog numbers (and consequently, the number of shooters), while other prey sources (i.e., lagomorph) were increasing.

Other studies conducted on ingestion of lead in species preyed on by hawks imply large quantities of shot prey must be consumed in order for the levels of lead to be lethal. Knopper et. al. (2006) found that to exceed the lethal dose of lead, a 1-kg hawk would have to eat an uninterrupted supply of almost 6.5 shot ground squirrel carcasses every day, over an average of 23 days. This study assumes that the hawks are feeding exclusively on shot carcasses, and that all the lead is assimilated by the hawk.

Leary et al. (1998) found ferruginous hawk home range sizes varied considerably, from 6.8 to 52.7 square miles (17.7 to 136.4 km^2), and theorized the variation may be due to differences in habitat quality or prey densities. The nearest confirmed ferruginous hawk nest is over 10 miles from the 4W Ranch, yet these raptors are routinely observed in this area (Talon Environmental 2007). Consequently, it is possible the prairie dog colonies on the 4W Ranch represent an important portion of a large home range for this species.

Finally, the 4W Ranch's records indicate that since recreational hunts of prairie dogs has occurred almost every year since 1991, no dead ferruginous hawks have ever been found, and the hawks continue to be observed across the ranch (Talon Environmental 2007). However, dead birds if present could be difficult to find and are probably removed quickly by scavengers (Mineau and Collins 1988).

Based on the assumptions incorporated into the revised risk assessment equations and recent lead studies on raptors, it remains inconclusive if ferruginous hawks could be impacted by lead ingestion. However, with the number of assumptions in the model and the propagation of errors, misinterpreting the results of the analysis could occur. Since there is uncertainty in the risk assessment, the Service suggests minimizing risks to ferruginous hawks by avoiding the use of lead bullets. As a precautionary measure for returning clients, the 4W Ranch will phase out the use of lead bullets over the term of this CCAA, and require new

shooters to use nontoxic (e.g., copper) or non-expanding bullets to avoid the potential risk of exposing raptors to lead from recreationally shot prairie dogs.

However, raptors may continue to be exposed to lead from recreational shooters on other federal lands in the area that may shoot and leave other species (e.g., jack rabbits) for scavengers. The Service will be notified if dead raptors are encountered on the 4W Ranch. These species will be collected and submitted for necropsy, if the cause of death is not evident (e.g., electrocution) to further aid in understanding raptor biology.

8. ASSURANCES PROVIDED

Through this CCAA, the Service provides Major Robert L. Harshbarger and Jean S. Harshbarger assurances that no additional conservation measures nor additional land, water, or resource use restrictions, beyond those voluntarily agreed to and described in the "Conservation Measures" section of this CCAA, will be required should the black-tailed prairie dog, mountain plover, burrowing owl or ferruginous hawk become listed in the future. These assurances will be authorized with the issuance of an enhancement of survival permit under section 10(a)(1)(A) of the Endangered Species Act. The application for the enhancement of survival permit is included as Appendix 1 to this CCAA.

Ranch activities covered by these assurances include the following specific and general actions:

- Allow recreational shooting of prairie dogs on the 3,000 acres included in the management areas (see Section 7.1 for a detailed description),

- Allow federal and state approved removal methods to prevent prairie dog encroachment on the designated 370 acres of hay meadows and pastures (see Section 7.1 for a complete description),

- Allow continuation of current ranch practices, such as habitat improvement projects (e.g., re-seeding, aerating, prickly pear cactus control, no-till seeding) and on and off road vehicle use with consultation and cooperation by the Service.

9. ASSURANCES PROVIDED TO PROPERTY OWNER IN CASE OF CHANGED OR UNFORESEEN CIRCUMSTANCES

The assurances listed below apply to the Property Owner with an enhancement-of-survival permit associated with this CCAA where the CCAA is being properly implemented. The assurances apply only with respect to species adequately covered by the CCAA.

(1) *Changed circumstances provided for in the CCAA.* If additional conservation measures are deemed necessary to respond to changed circumstances and were provided for in the CCAA's operating conservation program, the permittee will implement the measures specified in the CCAA.

(2) *Changed circumstances not provided for in the CCAA.* If additional conservation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the CCAA's operating conservation program, the Service will not require any conservation and mitigation measures in addition to those provided for in the CCAA without the consent of the permittee, provided the CCAA is being properly implemented.

(3) *Unforeseen circumstances.*

(A) In negotiating unforeseen circumstances, the Service will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the CCAA without the consent of the permittee.

(B) The Service will have the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available. These findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species. The Service will consider, but not be limited to, the following factors:

(1) Size of the current range of the affected species;
(2) Percentage of range adversely affected by the CCAA;
(3) Percentage of range conserved by the CCAA;
(4) Ecological significance of that portion of the range affected by the CCAA;
(5) Level of knowledge about the affected species and the degree of specificity of the species' conservation program under the CCAA; and
(6) Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

10. MONITORING PROVISIONS

The black-tailed prairie dog management areas will be managed to maintain a viable and self-sustaining population, using adaptive management of the rangeland resource. 4W Ranch (or its designate) will monitor each prairie dog management area and all species covered under this CCAA. (For detailed description of monitoring, see discussion of Biological Monitoring below.) Results of this monitoring will determine prairie dog management to be implemented during the next season. If the total burrow density in an individual management area falls below the threshold of 10 active burrows per acre (25 active burrows per hectare) or the active:inactive burrow ratio falls below 0.40:1.00, a colony will be considered adversely affected and shooting pressure will be eliminated. This provides a safety factor if impacts are occurring then a change in management will occur. Given prairie dog reproductive rates, rebound of the population should be seen quickly with changes at this population density (Figure 1). This is a continuation of the current management practiced by the 4W Ranch, which involves rigorous monitoring, casual observations and data recording by the ranch manager, their employees, and their clientele.

11. COMPLIANCE MONITORING

The Permittee will be responsible for monitoring and reporting specified herein related to implementation of the CCAA and fulfillment of its provisions, including implementation of agreed-upon conservation measures, and take authorized by the permit. The Service, after reasonable prior notice to the Property Owner, may enter the enrolled lands to ascertain compliance with the CCAA. For this CCAA, reasonable prior notice will be considered notice given at two weeks in advance of a visit.

12. BIOLOGICAL MONITORING

12.1 BLACK-TAILED PRAIRIE DOG.

The permittee (or his designated alternate) will:

(1) Determine active:inactive burrow density,

(2) Determine acreages of prairie dog colonies bi-annually,

(3) Determine prairie dog presence/absence on all management areas annually,

(4) Determine weekly and annual cumulative mortality by recreational shooting,

(5) Record and track "take" and effort, and

(6) Determine colony density. Specifically, the permittee agrees to:

1. Map and determine acreage of prairie dog management areas using GPS and GIS systems. Do baseline determination and repeat every other year for life of plan to monitor expansion/contraction of management areas. Record total acreage within 4W Ranch CCAA area.

2. Determine prairie dog presence/absence prior to start of recreational shooting season yearly on all management areas.

3. Determine active burrow density yearly using at least two randomly placed line transects with two-meter belts through 70% of the management areas, with priority on areas with greater shooting pressure. Complete active:inactive burrow surveys after July 31.

4. Record weekly and annual estimated harvest as reported by recreational shooters.

5. Record weekly and annual shooting effort (shooter days).

6. Determine estimated weekly and annual take per unit effort.

7. Combine transect data from management areas to get the 4W Ranch colony (complex) density.

8. Store data in database maintained by ranch owners.

12.2 MOUNTAIN PLOVER

Surveys will occur during the period of May 1 to June 15 for presence/absence, with the last week of June to July 4 for nest densities (USFWS Mountain Plover Survey Guidelines 1999).

12.3 BURROWING OWL

Surveys will occur April 30 to July 10 for egg-laying through fledging, range

wide (Call 1978); and in Wyoming, May 15 to August 1 for courtship-fledging (Korfanta et al. 2000).

12.4 FERRUGINOUS HAWK

Surveys will occur from March 17 to July 2 for egg-laying through fledging, range wide (Call 1978); in Wyoming, for maximum number of breeding pairs April 25 to May 20 (Ayers 1996); April 15 to July 15 for courtship through fledging (WGFD 2006).

12.5 ALL SPECIES

The Permittee (or designated alternate) will determine presence/absence of individuals in suitable habitat, including individual and nest information for the burrowing owl, mountain plover and ferruginous hawk. Typically this will occur as result of casual observation during ranch activities or during other more rigorous monitoring.

In general, when surveying for other species covered by the CCAA, the permittee agrees to:

1. Survey in conjunction with prairie dog surveys, when appropriate, using prairie dog survey line transects.

2. Search entire area covered by CCAA using personal aircraft, ATV's, and other ranch vehicles, as necessary. Locate existing nest structures and active nests.

3. Record number of individuals as well as nests as weekly total and map, including casual observations by ranch personnel and recreational shooters.

4. Store data in database maintained by ranch owners.

Reports will be due December 31 of each year and copies will be made available to all Parties.

13. NOTIFICATION OF TAKE REQUIREMENT

By signature of this CCAA, Major Robert L. Harshbarger and Jean S. Harshbarger agree to provide the Service with an opportunity to rescue individuals of the covered species before any authorized take occurs. Because take of these species is on an ongoing basis, notification can be done annually at least 48 hours prior to the beginning of the shooting season or at least 48 hours prior to any prairie dog removal effort.

14. DURATION OF CCAA AND PERMIT

The CCAA, including any commitments related to funding under Service programs, will be in effect for a duration of [10] years following its approval and signing by the Parties. The section 10(a)(1)(A) permit authorizing take of the species will have a term of [10] years from the effective date of the permit. The permit and CCAA may be extended beyond the specified terms through amendment, upon agreement of the Parties.

15. MODIFICATIONS

After approval of the CCAA, the Service may not impose any new requirements or conditions on, or modify any existing requirements or conditions applicable to, a landowner or successor in interest to the landowner, to compensate for changes in the conditions or circumstances of any species or ecosystem, natural community, or habitat covered by the CCAA except as stipulated in 50 CFR 17.22(c)(5) and 17.32(c)(5).

16. MODIFICATION OF THE CCAA

Any party may propose modifications or amendments to this CCAA, as provided in 50 CFR 13.23, by providing written notice to, and obtaining the written concurrence of, the other Parties. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. The Parties will use their best efforts to respond to proposed modifications within 60 days of receipt of such notice. Proposed modifications will become effective upon the other Parties' written concurrence.

17. AMENDMENT OF THE PERMIT

The permit may be amended to accommodate changed circumstances in accordance with all applicable legal requirements, including but not limited to the Endangered Species Act, the National Environmental Policy Act, and the Service's permit regulations at 50 CFR 13 and 50 CFR 17. The party proposing the amendment shall provide a statement describing the proposed amendment and the reasons for it.

18. TERMINATION OF THE CCAA

As provided for in Part 8 of the Service's CCAA Policy (FR 64:32726), the Permittee may terminate implementation of the CCAA's voluntary management actions prior to the CCAA's expiration date, for good cause, even if the expected benefits have not been realized. If the Permittee is unable to continue implementation of the plans and stipulations of the CCAA, whether due to catastrophic destruction of the species population numbers or habitat or due to unforeseen hardship, the Permittee would relinquish the permit to the Service. The Permittee may terminate this CCAA for good cause with [60] days prior written notice to the other Parties, and the Service is provided an opportunity to relocate affected species within [30] days of that notice. The Permittee also may terminate the CCAA at any time for any other reason, but termination for reasons other than uncontrollable circumstances such as those associated with a force majeure event shall extinguish the Permittee's authority to take species (if listed) or occupied habitat under the permit.

Since the 4W Ranch FLP does not own all the subsurface mineral rights underlying the CCAA area, there is a potential for the development of those mineral rights to occur without the consent of the surface land owner. This is a threat to the conditions of the CCAA, and the Service must consider potential activities that may occur on the surface property owned by the 4W Ranch, but outside the ranch's control. If development of these subsurface minerals occurs, the Service will review those actions related to the development to ensure they are compatible with the conditions of the CCAA. If the actions are not compatible, modifications to the CCAA as currently drafted may be necessary through mutual agreement, potentially requiring additional conservation measures by the permit holder. If such modifications are unacceptable or untenable, the permit holder may implement their right to terminate the CCAA.

19. PERMIT SUSPENSION OR REVOCATION

The Service may suspend or revoke the permit for cause in accordance with the laws and regulations in force at the time of such suspension or revocation. The Service also, as a last resort, may revoke the permit if continuation of permitted activities would likely result in jeopardy to covered species (50 CFR 13.28(a)). Prior to revocation, the Service would exercise all possible measures to remedy the situation.

20. REMEDIES

Each party shall have all remedies otherwise available to enforce the terms of the CCAA and the permit, except that no party shall be liable in damages for any breach of this CCAA, any performance or failure to perform an obligation under this CCAA or any other cause of action arising from this CCAA.

21. DISPUTE RESOLUTION

The Parties agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by all Parties.

22. SUCCESSION AND TRANSFER

This CCAA shall be binding on and shall inure to the benefit of the Parties and their respective successors and transferees, (i.e., new owners) in accordance with applicable regulations (50 CFR 13.24 and 13.25). The rights and obligations under this CCAA shall run with the ownership of the enrolled property and are transferable to subsequent non-Federal property owners pursuant to 50 CFR 13.25. The enhancement-of-survival permit issued to the Permittee also will be extended to the new owner(s). As a party to the original CCAA and permits, the new owner(s) will have the same rights and obligations with respect to the enrolled property as the original owner. The new owner(s) also will have the option of receiving CCAA assurances by signing a new CCAA and receiving a new permit. The Permittee shall notify the Service of any transfer of ownership, so that the Service can attempt to contact the new owner, explain the baseline responsibilities applicable to the property, and seek to interest the new owner in signing the existing CCAA or a new one to benefit listed species on the property. Assignment or transfer of the permit shall be governed by Service regulations in force at the time.

23. AVAILABILITY OF FUNDS

Implementation of this CCAA is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this CCAA will be construed by the Parties to require the obligation, appropriation, or expenditure of any funds from the U.S. Treasury. The Parties acknowledge that the Service will not be required under this CCAA to expend any Federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

24. RELATIONSHIP TO OTHER AGREEMENTS

The Permittee is a member of the Thunder Basin Grasslands Prairie Ecosystem Association (Association), a group currently working with the Service on development of a larger-scale, multi-species CCAA. The Permittee may elect to participate in activities under the Association's CCAA in the future. This current CCAA is consistent with conservation actions being considered in development of the Association's CCAA.

25. NO THIRD-PARTY BENEFICIARIES

This CCAA does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this CCAA to maintain a suit for personal injuries or damages pursuant to the provisions of this CCAA. The duties, obligations, and responsibilities of the Parties to this CCAA with respect to third parties shall remain as imposed under existing law.

26. NOTICES AND REPORTS

Any notices and reports, including monitoring and annual reports, required by this CCAA shall be delivered to the persons listed below, as appropriate:

Major Robert L. Harshbarger and Jean S. Harshbarger
4W Ranch FLP
1162 Lynch Road
Newcastle, WY 82701

Brian T. Kelly
Field Supervisor, Wyoming Field Office
U.S. Fish and Wildlife Service
5353 Yellowstone Road, Suite 308
Cheyenne, WY 82009

IN WITNESS WHEREOF, THE PARTIES HERETO have, as of the last signature date below, executed this Candidate conservation Agreement with Assurances to be in effect as of the date that the Service issues the permit.

_____ _____
Permittee Date

_____ _____
Field Office Supervisor Date
U.S. Fish and Wildlife Service

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