APPENDIX E

BIOLOGICAL ASSESSMENT AND EVALUATION

BIOLOGICAL ASSESSMENT AND EVALUATION[1]

FOR

BLACK-TAILED PRAIRIE DOG CONSERVATION AND MANAGEMENT

Nebraska National Forest and Associated Units

Buffalo Gap and Fort Pierre National Grasslands, South Dakota

Oglala National Grassland, Nebraska National Forest and Samuel R. McKelvie National Forest, Nebraska

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[1] Meets the standards for both a Biological Evaluation (FSM 2672.42) and Biological Assessment (50 CFR 402.12(f)).

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Species Table of Contents

Species Considered in the Analysis and Species Eliminated from the Analysis

I. INTRODUCTION

The purpose of this Biological Assessment (BA) and Biological Evaluation (BE) is to determine the likely effects of black-tailed prairie dog (prairie dog) (*Cynomys ludovicianus*) conservation and management on the Nebraska National Forest (NNF) for federally listed species and proposed species under the Endangered Species Act (ESA) (BA) and Forest Service sensitive species (BE) (FSM 2670.31-2670.32).

Section 7 of the ESA requires federal agencies to use their authorities to carry out programs to conserve endangered and threatened species, and to insure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of listed or proposed species, or result in the destruction or adverse modification of their designated critical habitats. A BA must be prepared for federal actions that are "major construction activities" (defined under the National Environmental Policy Act (NEPA) as a project significantly affecting the quality of the human environment) to evaluate the potential effects of the proposal on listed or proposed species. The contents of the BA are at the discretion of the federal agency, and will depend on the nature of the federal action (50 CFR 402.12(f)).

The Forest Service has established direction in Forest Service Manual 2670 to guide habitat management for Threatened, Endangered, Proposed, and Sensitive species (TEPS). Preparation of a BE as part of the NEPA process ensures that TEPS species receive full consideration in the decision-making process.[1]

II. DESCRIPTION OF THE PROPOSAL

PURPOSE AND NEED

The Record of Decision (ROD) for the Land and Resource Management Plan (LRMP) was signed on July 31, 2002. The ROD and LRMP provide general guidance and direction for conserving and managing prairie dogs on National Forest System (NFS) lands. This guidance and direction addresses use of rodenticides, landownership adjustment, vegetation management, livestock grazing, prairie dog shooting/hunting, translocation, and other management options to either expand or limit growth of prairie dog populations and colonies. The LRMP (p. 1–21) directs the Forest Service to consult statewide prairie dog management plans for additional guidance on the appropriate response to complaints of unwanted prairie dog colonization on adjacent agricultural lands. The ROD states that the Forest Service intends to implement state-wide prairie dog management plans to the extent allowable by law and policy in providing direction for reducing unwanted prairie dog colonization on adjacent lands through a LRMP amendment, if necessary. Since the signing of the ROD, several events have occurred that make this proposal timely:

[1] Standards for preparation and the content of Biological Evaluations are established in the Forest Service Manual (FSM 2672.42). Additional guidance is provided in Region 2 Manual Supplement 2600-2003-1.

1. In the August 12, 2004, Federal Register, the U.S. Fish and Wildlife Service (FWS) decided that a proposed rule to list the prairie dog is not warranted, and the prairie dog is no longer a candidate species for listing under the ESA.

2. The South Dakota prairie dog management plan is in the final stages of completion and is awaiting approval. It is unlikely that the State of Nebraska will issue a statewide prairie dog management plan in the foreseeable future.

3. Extended drought conditions have increased prairie dog colony expansion and unwanted colonization of adjacent lands.

4. In response to the treatment of prairie dog colonies with zinc phosphide by USDA Animal and Plant Health Inspection Service (APHIS) in the fall of 2004, several conservation organizations expressed concern over the effects of this action on the Conata Basin black-footed ferret population and other associated wildlife.

AREA AFFECTED

The areas affected by the black-tailed prairie dog management plan are the Buffalo Gap and Fort Pierre National Grasslands in South Dakota, and Samuel R. McKelvie and Nebraska National Forests and Oglala National Grassland in Nebraska.

Buffalo Gap National Grassland. The Buffalo Gap National Grassland is located in southwestern South Dakota and includes more than 589,000 acres of land that borders and is intermingled with private, state, Indian reservation, and national park lands. The eastern half of this unit extends from near Kadoka, South Dakota, on the east, to the Cheyenne River on the west, north to U.S. Highway 14, and south to the Pine Ridge Indian Reservation. The Wall Ranger District (WRD), Wall, South Dakota, administers the eastern half. The WRD is divided into 3 geographic areas (Wall North, Wall Southeast, and Wall Southwest). The Wall Southeast Geographic area contains a 5,130-acre block that is identified in the LRMP as 3.63 Black-footed Ferret Reintroduction Habitat. The Wall Southwest Geographic area contains Conata Basin which is a 73,590 acre block that is identified in the LRMP as 3.63 Black-footed Ferret Reintroduction Habitat. Ferrets have been successfully reintroduced into this area. The western half of the Buffalo Gap National Grassland extends from the Cheyenne River on the east to the Wyoming and Nebraska borders on the west and south, respectively. The Fall River Ranger (FRRD) District, Hot Springs, South Dakota, administers this unit. The FRRD is divided into 3 geographic areas (Fall River West, Fall River Southeast, and Fall River Northeast). The Fall River Southeast Geographic area contains a 25,300-acre block that is identified in the LRMP as 3.63 Black-footed Ferret Reintroduction Habitat.

Fort Pierre National Grassland. The Fort Pierre National Grassland (116,000 acres) lies south of Pierre, South Dakota, north of Interstate 90, and west of the Lower Brule Indian Reservation. The Fort Pierre National Grassland consists of mixed-grass vegetation on a rolling hill landscape just west of the Missouri River.

Nebraska National Forest (Pine Ridge Ranger District). These lands (50,500 acres) are in Dawes and Sioux Counties of northwestern Nebraska and include the Soldier Creek Wilderness

(7,800 acres). Elevations rise to 5,000 feet along ponderosa pine covered ridges. The unit is administered by the Pine Ridge Ranger District, Chadron, Nebraska.

Nebraska National Forest (Bessey Ranger District). About 90,200 acres of sandhills prairie makes up the Nebraska National Forest, Bessey Ranger District, located in central Nebraska in Thomas and Blaine counties. Topography consists of rugged sandhills.

Samuel R. McKelvie National Forest. The 116,100-acre Samuel R. McKelvie National Forest, administered by the Bessey Ranger District, lies in the Sandhills of north central Nebraska in Cherry County. Topography consists of rugged sandhills interspersed with large expansive valleys.

Oglala National Grassland. The 94,200-acre Oglala National Grassland lies in Dawes and Sioux counties of northwestern Nebraska and contains mostly mixed-grass vegetation. Topography consists of rolling hills and badlands. The grassland is administered by the Pine Ridge Ranger District, Chadron, Nebraska.

EXISTING CONDITION

Approximate prairie dog colony acreage for each unit in the project area is displayed in Table 1. A map of potential prairie dog habitat is maintained in the project record.

Table 1. Acres of Active Prairie Dog Colonies during 2004 on National Grassland (NG) and National Forest (NF) units of the Nebraska National Forest.

Location	Acres of Active Colonies*	Percent of Area in Colonies	Map #	Approximate Number of Colonies	Average Colony Acreage (range)
Buffalo Gap N.G.	26,030	4.4	E-2 to E-6	309	85 (<1 to 4,060)
Fort Pierre N.G.	1,340	1.2	E-1	53	25 (<1 to 313)
Oglala N.G.	2,220	2.4	E-7	26	85 (<1 to 1,100)
Neb. N. F. Bessey R. D.	90	0.1	E-8	9	10 (1 to 25)
Samuel R. McKelvie N. F.	0	0	0	0	0
Neb. N.F. Pine Ridge R. D.	0	0	0	0	0
Combined	29,680			397	75 (<1 to 4,060)

*These acres do not include prairie dog colonies treated with rodenticide in the fall of 2004.

LIST OF EFFECTS CONSIDERED IN THIS ANALYSIS/EVALUATION

- Effects of rodenticide use (total acres and general location) in and outside black-footed ferret (ferret) habitat on ferrets, prairie dogs, and other species.
- Effects of modifying the current prairie dog shooting closure in Conata Basin on ferrets, prairie dogs and other wildlife species.
- Effects of delaying prairie dog shooting restrictions in Smithwick ferret habitat on ferrets, prairie dogs, and other wildlife species.

This analysis assumes all prairie dog colonies within the boundary management zone will be treated with rodenticide within the life of this project. However, compliance with all management direction, as well as specific circumstances within the boundary management zone, may result in less than the maximum acreage actually being treated.

There are no prairie dog colonies on the Samuel R. McKelvie National Forest and NNF, Pine Ridge Ranger District, and these areas are not included in any of the analyses in the Final Environmental Impact Statement (FEIS). There are several small colonies on the NNF, Bessey Ranger District, but the long-term persistence of this population is uncertain because of marginal habitat capability. Because of this uncertainty, no prairie dog rodenticide use or other management tools will be considered or authorized for this area. Management of this prairie dog population will be limited to annual monitoring to determine population status and trend.

PREFERRED ALTERNATIVE

Alternative 3: Prairie dog conservation concurrent with population regulation through non-lethal methods and expanded rodenticide use along NFS boundaries (0.25 to 0.5 mile boundary management zones) is the preferred alternative.

Three alternatives were analyzed in detail in the Draft Environmental Impact Statement (DEIS). All three alternatives were analyzed in the DEIS (Appendix E) for effects on the threatened, endangered and Forest Service sensitive species that occur in the area.

Only the preferred alternative is analyzed in this appendix. For a more detailed description of the preferred alternative refer to Chapter 2 of the FEIS. Table 2 includes information on prairie dog colonies and potential rodenticide use under the preferred alternative. This information was used for effects analysis. Refer to Appendix E in the DEIS for effects analyses for Alternatives 1 and 2.

However, based on new information concerning possible lead poisoning of raptors and other scavengers resulting from prairie dog shooting, the original biological determinations for the Northern harrier in Appendix E of the DEIS have now been changed from “no impact” to “may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”.

Table 2. Summary of the Preferred Alternative Effects on Black-Tailed Prairie Dog Colonies and Rodenticide Use

Alternative And National Grassland/Forest	Current Colony Acreage Subject to Possible Rodenticide Use [1]	Predicted Annual Rodenticide Use [2] 2005 –2012 (acres)	Current Active Colony Acreage [3] (Rodenticide Unlikely)	Current Number of ActiveColonies / Average Colony Size [3] (Rodenticide Unlikely)	Predicted Colony Acreage in 2012 [4]
Buffalo Gap N.G.	10,450	6,800 to 8,700	22,360	190 colonies / 118 acres	27,000 to 38,000
Conata Basin Ferret Habitat	4,260	3,300 to 6,200	19,290	101 colonies / 191 acres	23,000 to 32,000
Smithwick Ferret Habitat	210	160 to 290	780	14 colonies / 56 acres	1,300 to 1,800
Fort Pierre N.G.	470	120 to 210	870	36 colonies / 24 acres	1,100 to 1,400
Colony Complex	300	90 to 140	550	10 colonies / 52 acres	700 to 900
Oglala N.G. and Colony Complex	1,050	410 to 510	1,170	7 colonies / 167 acres	1,400 to 1,800
Nebraska N.F. (Bessey R.D.)	0	0	90	9 colonies / 10 acres	<100
Combined	11,970	7,330 to 9,420	24,490	242 colonies / 101 acres	30,000 to 41,000

[1] Based on GPS surveys in 2004 and includes colonies that may be a risk to health and safety or facilities or located in boundary management zones; includes 6,780 acres of colonies treated with rodenticide in 2004

[2] Includes colonies treated with rodenticide in 2004 and both initial and follow-up (maintenance) rodenticide applications

[3] Based on GPS surveys in 2004; includes colonies that are not in boundary management zones or not currently a risk to health and safety or infrastructure

[4] Projections assume that some colonies within boundary management zones would not be treated with rodenticide

BIOLOGICAL ASSESSMENT AND EVALUATION PROCESS

Supporting Information and Pre-field Review. Two lists of plant and animal species were developed. The first list includes those species currently protected under the ESA (Table 5). The second list includes species that are considered sensitive by Region 2 of the Forest Service (Table 8).

Information on species at risk and their habitats was obtained from a large volume of published and unpublished references including regional programmatic BEs.

Biological Evaluation for the Black-footed Ferret (USDA Forest Service 1995e)

Biological Evaluation for Whooping Crane (USDA Forest Service 1995q)

Biological Evaluation for the American Burying Beetle (USDA Forest Service 1995e)

Biological Assessment for the Bald Eagle (USDA Forest Service 1995b, 1995c)

Biological Evaluation for the Swift Fox (USDA Forest Service 1995o)

Biological Evaluation for the American Bittern (USDA Forest Service 1995a)

Biological Assessment for the Long-billed Curlew (USDA Forest Service 1995h)

Biological Evaluation for the Ferruginous Hawk (USDA Forest Service 1995g)

Biological Evaluation for the Burrowing Owl (USDA Forest Service 1995f)

Biological Assessment for the Mountain Plover (USDA Forest Service 1995i)

Biological Evaluation for the Trumpeter Swan (USDA Forest Service 1995p)

Biological Evaluation for the Black Tern (USDA Forest Service 1995d)

Biological Evaluation for the Northern Leopard Frog (USDA Forest Service 1995j)

Biological Assessment for the Regal Fritillary Butterfly (USDA Forest Service 1995k)

Biological Evaluation for Sensitive Species Not Impacted by Grazing (USDA Forest Service 1995l)

Biological Evaluation for Sensitive Species in Riparian Areas (USDA Forest Service 1995m)

The Regional Leadership Team initiated the Species Conservation Project (SCP) in April, 2000. The purpose of the project is to compile scientific information, and develop a comprehensive approach to conservation of fish, wildlife and plant species. Chartered as a 5-year project, it was designed to:

- Develop consistent scientific information and tools to improve our efforts to provide for species viability and ecosystem sustainability.
- Change and improve planning and implementation by integrating ecological objectives and outcomes early in the design phase, rather than mitigating negative impacts.
- Improve organizational effectiveness by streamlining analyses and building internal and external credibility.

The following SCP assessments were consulted during the preparation of this document:

- Fringed Myotis (*Myotis thysanodes*): a technical conservation assessment (Keinath 2004).
- Swift Fox (*Vulpes velox*): a technical conservation assessment (Stephens & Anderson 2005).
- Northern Goshawk (*Accipiter gentiles atricapillus*): a technical Conservation assessment (Kennedy 2003).
- Chestnut-collared Longspur (*Calcarius ornatus*): a technical conservation (Sedgwick 2004a).
- McCown's Longspur (*Calcarius mccownii*): a technical conservation assessment. (Sedgwick 2004b).
- Short-eared Owl (*Asio flammeus*): a technical conservation assessment (Wiggins 2004).
- The Burrowing Owl (*Athene cunicularia*): a technical conservation assessment (McDonald et al.2004).
- Mountain Plover (*Charadrius montanus*): a technical conservation assessment (Dinsmore 2003).
- Brewer's Sparrow (*Spizella breweri*): a technical conservation assessment (Holmes and Johnson 2005).
- Grasshopper Sparrow (*Ammodramus savannarum*): a technical conservation assessment (Slater 2004).
- Black Tern (*Chlidonias niger surinamensis*): a technical conservation assessment (Naugle 2004).
- Lewis's Woodpecker (Melanerpes lewis): a technical conservation assessment (Abele et al. 2004, June 29).
- Sturgeon Chub (Macrhybopsis gelida): a technical conservation assessment (Rahel & Thel. 2004).

Field Reconnaissance. Surveys and inventories for listed species like the ferret and bald eagle have been conducted for many years by various individuals, organizations, and government agencies including the Forest Service, U.S. Fish and Wildlife Service, universities, and state wildlife and natural resource agencies. Incidental sightings of species like the bald eagle, whooping crane, and peregrine falcon have also been recorded.

Additional surveys, research, and inventories have been conducted by the Forest Service and/or others with regards to other species such as swift fox, mountain plover, greater prairie chicken, sage grouse, western burrowing owl, and regal fritillary butterfly. Surveys of prairie dog colonies have also been conducted by the Forest Service. Information gathered from such field work was used to help describe species distributions, habitat use, and habitat suitability. The information was also critical in helping to determine potential effects from implementation of each of the preferred alternative. Maps display the known locations of species on the units. They do not imply species distribution across the areas.

Analysis of Effects. The potential effects of the preferred alternative on each species are disclosed in this document. These evaluations include direct, indirect, and cumulative effects on each species. Cumulative effects are described at the scale of the NNF unless otherwise specified. The effects, expressed as biological determinations, are based on the assumption that

the standards and guidelines in the LRMP are fully implemented and strategically located to benefit species at risk.

To reduce the number of analyses, any species listed in the tables that meet one or more of following criteria (screens) was eliminated from further analyses:

> **Screen 1 - (Importance of Area).** Presence of the species or suitable habitat is doubtful or has not been documented.
>
> **Screen 2 - (Threats).** The species or potential habitat for the species may occur, but it's highly unlikely that land uses and allocations authorized by the Forest Service would affect the species and/or its habitat either on NFS lands or downstream.

Biological Determinations

This BA and BE process culminates with a determination of the likely effects of the preferred alternative on each species. The types of determinations that can be made for those species protected under ESA are determined by the U.S. Fish and Wildlife Service (1998) (Table 3).

No critical habitat has been proposed or designated on any of the lands administered by the NNF.

Table 3. Biological determinations for federally listed and proposed species

Threatened and Endangered Species:	
Determination	**Abbreviation**
• No effect	NE
• May affect, not likely to adversely affect	MA-NLAA
• May affect, likely to adversely affect	MA-LAA
Species proposed for federal listing:	
Determination	**Abbreviation**
• Not likely to jeopardize continued existence	NLJ
• Likely to jeopardize continued existence	LJ

Direction in Forest Service Manual 2670 establishes the types of determinations for Forest Service-designated sensitive species. The determinations (and abbreviations) made for these species are presented in Table 4.

Table 4. Biological determinations for Forest Service sensitive species

Region 2 Sensitive Species:	
Determination	**Abbreviation**
• No impact	NI
• Beneficial impact	BI
• May adversely impact individuals but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide	MAII
• Likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of species viability range-wide	LRLV

A biological determination is being made for each species for each national grassland and forest where the species or suitable habitat is located.

GENERAL EFFECTS

Direct effects

Direct effects are caused by the action and occur at the same time and place (50 CFR 1508.8).

Prairie dog rodenticide (2 percent zinc phosphide bait) when properly applied is highly effective in reducing prairie dog populations within treated colonies. Poisoning of non-target species can occur but is minimized when the rodenticide is applied according to label specifications and during favorable weather. In studies conducted in Conata Basin, measurable reductions in non-target populations were documented for deer mice (*Peromyscus maniculatus*), ants (Hymenoptera), and darkling beetles (Coleoptera), but there was no measurable reduction in avian and other invertebrate populations (Apa et al. 1991, Deisch et al. 1990, Uresk et al. 1985a, Uresk et al. 1985b, and Uresk et al. 1986).

Zinc phosphide is a heavy, finely ground gray black powder that is practically insoluble in water. When exposed to moisture it decomposes slowly and releases phosphine gas. Phosphine may be generated rapidly if the material comes in contact with dilute acids. When zinc phosphide comes in contact with dilute acids in the stomach, phosphine is released and it is this substance that causes death. Animals that ingest lethal amounts of bait usually die from asphyxiation within 3-5 hours (Timm 1983).

Zinc phosphide is a strong emetic (cause vomiting) which can factor into how much of the chemical it takes to kill the animal and whether or not an animal dies after ingesting the chemical (Schitoskey 1975).

The chemical zinc phosphide is used to treat grain bait (oats) for consumption by prairie dogs. Untreated grain is typically applied to the application area a few days prior to zinc phosphide application to promote consumption of the grain. Prairie dogs in most cases will not eat the grain bait until early in the fall when their natural forage matures and dries (South Dakota Department of Agriculture et al. 1994). When proper procedures are followed, efficacy of zinc phosphide bait is typically 90 percent or higher (South Dakota Department of Agriculture et al. 1994).

Results of laboratory studies generally indicate that zinc phosphide poses little secondary risk to non-target wildlife. Zinc phosphide breaks down rapidly in the digestive tract of affected animals, so predators and scavengers are generally not exposed to the compound. Species that were fed zinc phosphide-poisoned prey during lab studies and showed no negative physiological symptoms included Siberian ferrets, mongooses, coyotes , kit foxes, mink, black vultures, bald eagles, golden eagle, and great-horned owls (USDA Animal Plant and Health Inspection Service 1994).

Zinc phosphide is not stored in the muscle or other tissue of poisoned animals. There is no true secondary poisoning. However, it does remain toxic for as long as several days in the gut of dead rodents. Other animals can be poisoned if they eat enough of the gut content of rodents recently poisoned zinc phosphide (Timm 1983). This threat is lessened because most prairie dogs poisoned with zinc phosphide treated grains die inside their burrows (Tietjen 1976).

There is only a small amount of deterioration of zinc phosphide baits due to the evolution of phosphide gas; therefore, dry baits must be considered toxic indefinitely. Lecithin-mineral oil, added to zinc phosphide to adhere to grain bait, offers protection against moisture, and therefore increases its stability. Under field conditions, zinc phosphide baits may remain toxic several months until eroded by weather or decomposition of the carrier or the grain is removed by insects (Timm 1983).

Translocation of phosphine gas has been demonstrated, but it is rapidly converted to harmless phosphates (Timm 1983).

The LRMP prohibits the use of rodenticides (above-ground baits) for reducing prairie dog populations outside the period October 1 to December 31 to reduce risks to migratory birds. To reduce risk to other wildlife, the LRMP does not allow burrow fumigants in prairie dog colonies.

Prairie dog shooting can affect prairie dog populations. Shooting of prairie dogs may significantly reduce prairie dog densities (Vosburg and Irby 1998) and indefinitely maintain reduced densities in smaller isolated colonies (Knowles 1987). Shooting prairie dogs in colonies that have been previously poisoned could likely prevent or slow population recovery in those colonies. Also, gunfire and other related activity and disturbances may disrupt prairie dog foraging and other activities for extended periods of time. Prairie dogs exhibit different behavioral patterns in colonies where shooting occurs compared to colonies where there is no shooting. Prairie dogs in hunted colonies were more wary and responded more quickly to humans on foot and in vehicles, and may have spent less time foraging than individuals in non-hunted colonies (Vosburgh and Irby 1998). In a study conducted in eastern Wyoming, recreational shooting increased the alertness and decreased above ground activity of black-tailed prairie dogs, which in turn reduced the time spent foraging and resting. This resulted in a decrease in body condition of surviving adult prairie dogs, reduced pregnancy rate and reproductive output (Pauli 2005).

Another direct effect is the inadvertent or intentional killing of non-target animals while shooting prairie dogs. The extent of this problem is likely tied to two factors: the first is how much a non-target animal looks like a prairie dog; the second is the experience and scruples of the person doing the shooting. It would be possible to mistake a burrowing owl for a prairie dog if one is not careful, but impossible to mistake a whooping crane for a prairie dog. It is always possible for an unethical prairie dog shooter to kill anything that is within shooting range.

Another effect is secondary lead poisoning of non-target species caused by lead fragments left in the prairie dog carcasses after they have been shot by prairie dog shooters. In a study conducted in eastern Wyoming two types of bullets were tested to determine how much lead was present in the prairie dog carcasses after they had been shot: a soft point and a full metal jacket (both from .223 caliber rifles). Eighty-seven per cent of prairie dogs shot with soft point bullets contained bullet fragments compared to 7 percent of those shot with full metal jackets. Furthermore, the amount of lead found in prairie dog carcasses differed between the two bullet types; full metal jacket only averaged 19.8 mg of lead, while soft point averaged 225.2 mg of lead (Pauli personal comm). Therefore, it would be likely that a scavenger that eats a prairie dog carcass could suffer from lead poisoning.

Indirect effects

Indirect effects are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable (50 CFR 1508.8).

An indirect effect is the loss of habitat as a result of rodenticide use and reductions in prairie dog populations. Prairie dogs tend to cut all tall vegetation down in the vicinity of the colony, creating low structure grassland. Permanently removing prairie dog populations from an area could result in shift in the vegetative community from a buffalograss/ blue grama sod to a western wheatgrass/green needle community (this is dependent on the soil type for the particular site where the prairie dog colony is located). This in turn could alter habitat suitability for a variety of wildlife species in the area.

Prairie dog burrows create a unique habitat for other creatures, including burrowing owls, badgers, rabbits, black-footed ferrets, snakes, salamanders, and insects. Without live prairie dogs to maintain the burrow system, the burrows will deteriorate. Within a few years the burrow system breaks down, and its value to other wildlife is reduced.

A short-term indirect effect is reduction of prey base as a result of rodenticide use in prairie dog colonies. In the long term, vegetation on inactive prairie dog colonies can shift to a mixed grass prairie, with reduced densities of both small mammals and birds (Agnew 1983).

Cumulative effects

From a NEPA perspective, cumulative effects are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of agency (Federal or non-Federal) or person that undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (50 CFR 1508.7).

From an ESA perspective, cumulative effects are defined as those effects of future state or private activities, not involving Federal activities that are reasonably certain to occur within the action area. (Future federal actions will be subject to their own consultation.)

An obvious cumulative effect to this action is the additional reduction of prairie dog populations resulting from rodenticide use by other entities. Over 6,700 acres of colonies have already been treated with rodenticide on Buffalo Gap National Grassland. Nearly 24,250 acres of prairie dog colonies have been reported as treated with rodenticides on nearby private land by the State of

South Dakota in 2004 (South Dakota 2005). It is likely that there will be additional and substantial requests for more rodenticide treatment on Tribal and private lands.

Plague is currently not known to occur on any prairie dog colony within lands administered by the NNF. However, plague was confirmed in a prairie dog colony in western Custer County, South Dakota in September, 2004 near the border of Wyoming and South Dakota. Prairie dogs are highly susceptible to plague, which is considered to be a serious threat to the persistence of local prairie dog populations. The potential for plague to occur in prairie dog populations on the national grasslands and forests in the project is unknown, but it is acknowledged that plague can have dramatic impacts on prairie dog populations.

Other activities that can affect prairie dog populations in the project area include livestock grazing, construction, oil and gas exploration, and farming.

III. THREATENED, ENDANGERED, AND PROPOSED SPECIES CONSIDERED IN THE ANALYSIS

Threatened, endangered, and proposed species that may be present in the action area are provided in Table 5.

Table 5. Federally Listed Species Located on NFS Lands in the Project Area

STATUS: ENDANGERED

	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. Pine Ridge R. D.	Nebraska N. F. Bessey R. D.	Samuel R. McKelvie N. F.
MAMMALS						
Black-footed ferret	K					
BIRDS						
Whooping crane	K	K			K	
INVERTEBRATES						
American burying beetle					K	
PLANTS						
Penstemon haydenii					K	K

STATUS: THREATENED

BIRDS						
Bald eagle	K	K	K	K	K	K

K = Known occurrence in vicinity; date of last observation suggests that species still occurs in area,

SPECIES ELIMINATED FROM FURTHER ANALYSIS

All species eliminated from further analysis have been determined to have a "no effect" biological determination.

Screen 1 (Importance of Area)

None

Screen 2 - (Threats)

BLOWOUT PENSTEMON *Penstemon haydenii*

Rationale: Blowout penstemon occurs in sand blowouts of the Bessey Ranger District and Samuel R. McKelvie National Forest. It is highly unlikely that prairie dog colonies could persist in the unstable soils of a sandhill blowout.

AMERICAN BURYING BEETLE *Nicrophorus americanus*

Rationale: American burying beetle only occurs on the Bessey Ranger District and Samuel R. McKelvie National Forest. No change in management is proposed for this area in this decision. Also, rodenticide use is not authorized.

IV. CONSULTATION HISTORY

On December 14, 2004, a list of threatened, endangered, and proposed species that may be present in the action area was submitted to the U.S. Fish and Wildlife Service (FWS) (Table 5). Concurrence with the list of species was received on December 23, 2004. However, FWS recommended that the whooping crane (*Grus americana*) be added to the list.

Consultation with FWS for the revision of the LRMP is summarized in Appendix H of the Final Environmental Impact Statement (FEIS) and all consultation records are maintained in the project record for the LRMP in the Forest Supervisor's office in Chadron, Nebraska.

V. ANALYSIS OF EFFECTS – FEDERALLY LISTED AND PROPOSED SPECIES

BLACK-FOOTED FERRET *Mustela nigripes*

Distribution and Status. Historically, the black-footed ferret (ferret) distribution in North America corresponded primarily with that of prairie dogs (Higgins et al. 2000). The ferret is considered to be one of the rarest mammals in North America and the world, and was listed as endangered in 1967. Endangerment of the ferret came about largely through, 1) reductions and fragmentation of prairie dog colonies through poisoning, cultivation, urbanization and plague, 2) unintentional poisoning of ferrets through prairie dog poisoning efforts, and 3) disease, specifically canine distemper and plague (USDA Forest Service 2000).

One of the first opportunities to study black-footed ferret biology occurred from 1964 through 1974 during research on a remnant ferret population in South Dakota. Black-footed ferrets were "rediscovered" in 1981 in prairie dog colonies near Meeteetse, Wyoming. In 1985, sylvatic plague, a lethal disease to prairie dogs, was confirmed in the prairie dogs at Meeteetse. The fear of plague was then overshadowed by the discovery of canine distemper in the Meeteetse habitat. This disease is lethal to ferrets.

A plan was formulated to place animals from Meeteetse into captivity to protect them from distemper and to start a captive breeding program. In 1986, all remaining ferrets were removed from the wild, resulting in a captive population of 18 individuals. Captive breeding of ferrets eventually became very successful. Progress in captive breeding has produced over 5,000 ferrets. A goal of the breeding program is to retain as much genetic diversity as possible, but the only practical way to increase diversity is to find more wild ferrets. In spite of intensive searches of the remaining good ferret habitat and investigations of sighting reports, no wild ferrets have since been found.

The captive breeding program now is producing sufficient surplus ferrets for reintroduction into the wild. Initiated in 1991, ferrets have been reintroduced in eight areas across six western states including one site in Mexico (CBSG 2004). Ferret recovery is still not assured given severe habitat limitations and disease (CBSG 2004). Challenges facing the black-footed ferret reintroduction include low survivorship of released ferrets due to high dispersal and losses to other predators; unknown influence of low genetic diversity; canine distemper hazard; direct effects of plague on prairie dog populations and possible indirect effects on ferrets; and minimal suitable habitat for reintroduction.

Habitat. The ferret is known to inhabit prairie dog colonies almost exclusively. Colonies provide the ferret with its primary food source and shelter (USDA Forest Service 2000). The movement of ferrets between prairie dog colonies is characterized as dispersal (USDA Forest Service 2001a).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA—Endangered	G1, N1; Nebraska – SH; South Dakota – S1

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

In an intra-Service consultation on the reintroduction of ferrets into the Conata Basin/Badlands Area dated April 7, 1994, a low level of incidental take was anticipated from private land uses and authorized agency actions. Based on the best available information at that time, the FWS set an anticipated annual incidental take level from human-caused mortality of 12 percent for the entire experimental population. If the incidental take level is exceeded in any year, Section 7 consultation would immediately be reinitiated.

The ferret within the designated experimental population area on the Buffalo Gap National Grassland is considered a proposed species, rather than endangered. A Final Rule (U.S. Fish and Wildlife Service 1994), published in the Federal Register on August 18, 1994, designated an experimental population area that includes portions of the Buffalo Gap National Grassland and surrounding areas. Reintroduced ferrets are considered part of a non-essential experimental population in accordance with section 10(j) of the ESA. Such designation requires that future section 7 consultations shall consider the ferret population within the experimental population area on the Buffalo Gap National Grassland as a species proposed for listing.

Recovery and Conservation Planning. As described in the LRMP FEIS (USDA Forest Service 2001b), the FWS 1988 ferret recovery plan objective is to ensure the immediate survival of the species by accomplishing the following:

1) Increasing the captive population of ferrets to a census size of 200 breeding adults by 1991;
2) Establishing a pre-breeding census population of 1,500 free-ranging ferret breeding adults in 10 or more populations, with no fewer than 30 breeding adults in any population by the year 2010; and
3) Encourage the widest possible distribution of reintroduced ferret populations.

Existing Conditions. Among the land units administered by the NNF, the only known population of ferrets occurs in the Conata Basin, Buffalo Gap National Grassland (Maps E-9a, E-9b and E-10). There are historic records of ferrets on the Buffalo Gap National Grassland outside of the Conata Basin and the Fort Pierre National Grassland but, after many years of surveys (U.S. Fish and Wildlife Service 1993), no additional black-footed ferrets or ferret populations have been found outside the Conata Basin/Badlands reintroduction habitat.

Reintroduction habitat for the ferret is designated as MA 3.63 in the current LRMP (USDA Forest Service 2001c). The MA 3.63 designation only exists on the Buffalo Gap National Grassland and collectively encompasses a total of 104,020 acres. There are approximately 20,310 acres of prairie dogs within the Conata Basin ferret reintroduction area and approximately 990 acres of prairie dogs within the Smithwick ferret reintroduction area. To date, ferrets have not been released in the Smithwick. habitat.

The Conata Basin site is the most successful ferret reintroduction site in the nation (USDA Forest Service 2005). Currently (2004), the Conata Basin ferret reintroduction site has a minimum known population of 201 ferrets of which 104 are adults (Livieri and Perry 2005). From 1996 to 2004, there have been 389 litters totaling 773 ferret kits born in the wild on the Conata Basin site. The success of the Conata Basin site has been such that wild born ferret kits have been available for translocation to other reintroduction sites. To date, a total of 38 kits have been translocated to other ferret reintroduction sites. The Conata Basin site continues to yield a wealth of new information about black-footed ferrets and their ecology.

In 2000, the ferret population appeared to approach carrying capacity (equilibrium) and has oscillated since that year (Livieri and Perry 2005). To maintain a self-sustaining long-term ferret population in the Conata Basin, modeling of data from 2000 to 2002 suggests that a ferret family rating of approximately 200 would be needed (Livieri and Perry 2005). The figures derived from the model are considered as approximations allowing for some degree of flexibility. Livieri and Perry (2005) state that the model used is for alternative comparisons such that ferret family ratings should be interpreted as relative rather than absolute.

Prairie dog densities were based on the Biggins et al. (1993) model to calculate ferret family ratings, using 200 for the ferret family rating. For ferrets, the threshold would be a ferret family rating of 200. Table 6 outlines the necessary size and densities needed to support this ferret family rating.

Table 6. Prairie dog colony area and population densities for maintaining a ferret family rating of 200.

Acres	Hectares	Density/Ac/Ha	Total PD	Ferret Rating
25,128	10,173	6.1/15	152,600	200
18,846	7,630	8.1/20	152,600	200
15,077	6,104	10.1/25	152,600	200
12,564	5,087	12.1/30	152,600	200
10,769	4,360	14.2/35	152,600	200
9,423	3,815	16.2/40	152,600	200

Direct, Indirect and Cumulative Effects. Primary and secondary poisoning of ferrets by consumption of rodenticide bait or poisoned prairie dogs are not considered significant threats to ferrets (USDA Forest Service 2001b). Prey availability for ferrets would be reduced following rodenticide application in prairie dog colonies and repeated rodenticide applications would eventually reduce burrow availability for shelter (USDA Forest Service 2001b). The ferret would not likely suffer any direct effects from the use of zinc phosphide rodenticide used to reduce prairie dog populations, but would be indirectly affected by reduced prey availability through the loss of prairie dogs and suitable habitat.

The possibility of accidental ferret mortality exists with prairie dog shooting (Joslin and Youmans 1999). Prairie dog shooting could directly cause the accidental death of a ferret, although the potential for ferrets being shot is lessened by their nocturnal habit. However, ferrets have been known to be aboveground during daylight hours, particularly early morning and late evening periods when prairie dog shooting may be occurring. Prairie dog shooting can leave

lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Cumulatively, prairie dog habitat subject to rodenticide use and shooting would likely provide little if any ferret habitat. Livestock grazing can also indirectly influence prairie dog colony acreages (USDA Forest Service 2001b). Livestock grazing at high levels can promote low vegetative structure and encourage prairie dog acreage expansion, whereas a low level or elimination of livestock grazing can help promote higher vegetative structure which can contain, reduce or eliminate prairie dog acreage. Livestock grazing at low levels or removal of livestock grazing during drought can help ensure forage to help maintain prairie dog densities in ferret habitat. Precipitation events in terms of timing and amount can also be a dominant influence on vegetation structure, promoting or inhibiting plant growth. The cumulative effect of these factors can interact in variable ways to either promote or inhibit prairie dog colonies used as ferret habitat.

Additional cumulative effects may arise from land management activities by adjacent landowners. As discussed in Chapter 3 of this FEIS and USDA Forest Service (2001b), prairie dog rodenticide use will likely occur at some level on adjacent private and tribal lands resulting in further losses of potential ferret habitat. In addition, ferret habitat could be further reduced and fragmented in the event of plague epizootics in prairie dog colonies in the Conata Basin area.

Management of prairie dog populations using rodenticide, in combination with other non-lethal tools, may occur in the future in the interior areas of the national grasslands in the project area. As indicated in Section 3.1 and Table 3-2, interior colony acreages are expected to continue increasing under this proposed action. This continued growth is expected to result in additional concerns and issues about soil conservation and rangeland health, including effects on black-footed ferret recovery in Conata Basin.

DETERMINATION OF EFFECT AND RATIONALE FOR THE BLACK-FOOTED FERRET

Buffalo Gap N.G (within the Conata Basin/ Badlands experimental population area): The biological determination for the ferret under the preferred alternative inside the Conata Basin/Badlands experimental population area on the Buffalo Gap National Grassland is: *"not likely to jeopardize the continued existence of the species"*.

Rationale: Because the ferret population in Conata Basin is designated a nonessential experimental population, it is not considered essential to the conservation or continued existence of the species. Also, as described under Alternative 3, rodenticide use in the Conata Basin black-footed ferret reintroduction area could only extend to a half mile if minimum black-footed ferret population thresholds continue to be met. These thresholds, based on current information,

indicate that between 12,500 and 19,000 acres of active prairie dog colonies are needed, depending on prairie dog densities, to support a long-term ferret population (Livieri and Perry 2005). If the minimum thresholds are not being met, rodenticide use would not occur or would be limited to less than a half mile from adjoining lands. Under this alternative, it is predicted there will be between 23,000 and 32,000 acres of active prairie dog colonies in Conata Basin by the year 2012, depending on annual colony expansion rates.

Under the preferred alternative, the total prairie dog colony acreage in Conata Basin could be reduced to approximately 19,290 acres in the short-term after rodenticide application. Under this alternative, approximately 15,000 acres at moderate prairie dog density levels would be needed to maintain a minimum ferret family rating of 200. At low prairie dog densities, the ferret family rating threshold of 200 would not be met if low densities occurred across the entire Conata Basin ferret area. Under this alternative, rodenticide use would be modified to maintain a minimum 200 ferret family rating. The preferred alternative maintains ferret family rating of 159 at low prairie dog densities, 272 at moderate prairie dog densities and 386 at high densities. The alternative meets and exceeds the minimum threshold at moderate and high prairie dog densities.

A small area within the existing MA 3.63 area (black-footed ferret reintroduction habitat) in Conata Basin has not demonstrated any contribution to the ferret recovery program and will likely not contribute in the foreseeable future (Livieri and Perry 2005). This area is relatively isolated from the primary Conata Basin habitat and does not provide sufficient habitat to support a ferret population.

Limited regulated shooting of prairie dogs may be allowed within the half mile zone, excluding the interior portions of the ferret reintroduction habitat area. It is possible that any ferrets in an area where prairie dog shooting is occurring could be at risk of being shot. Prairie dog shooting can also result in lead fragments being left in prairie dog carcasses, posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Some limited rodenticide use could occur in some national grassland colonies that border the Badlands National Park in the Bigfoot Road area. Due to the limited habitat potential for ferrets within this area of the Park, potential effects on ferrets in this area of the Park would be insignificant and discountable.

There may be some ferrets inhabiting prairie dog colonies that overlap boundaries of Badlands National Park and Forest Service managed lands. Ferrets located in Badlands National Park are considered threatened for section 7 purposes but since lethal control of prairie dogs will not occur in those colonies adjacent to Badlands National Park that may be inhabited by ferrets, the biological determination for ferrets within the Park is "may affect, but not likely to adversely affect".

WHOOPING CRANE *Grus Americana*

Distribution and Status. Whooping cranes were once near extinction with only 15 or 16 wintering individuals in 1941, but by 1995 there were 257 birds in captivity and in the wild (Lewis 1995). These large white cranes are rare migrants across Fort Pierre National Grassland (Peterson et al. 1991), Buffalo Gap National Grassland (Graupman et al. 1991), and the Bessey Ranger District (Peterson et al. 1993). The whooping cranes that migrate through South Dakota and Nebraska nest in Canada and winter on the Texas Gulf Coast (Ashton and Dowd 1991).

Habitat. Locally, the migrants use shallow water, including stock dams, as overnight roost sites (Ashton and Dowd 1991). Most wetlands used for roosting during migration were less than about 10 acres in size and within 1 km of suitable feeding sites, croplands or wetlands (Lewis 1995). The birds are omnivorous and feed on plants and animals, including grain (Ashton and Dowd 1991).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA—Endangered	G1, N1N; Nebraska - S1; South Dakota - SNA

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. In fall, whooping cranes are known to migrate through South Dakota between 8 September and 11 November (Tallman et al. 2002). Maps E-11 through E-13 displays local sites in the project area where the birds have rested during past migrations.

Conservation agencies monitor these birds as they migrate from Canada to the Gulf Coast. A contingency plan is in place to protect whooping cranes should they appear locally during fall migration.

Direct, Indirect, and Cumulative Effects. There is a remote possibility that whooping cranes could be exposed to rodenticide bait (oats) if they stopped on a project area during migration. Feeding patterns of the cranes, the low concentration of zinc phosphide in the bait, the small amount of bait applied per unit area, widely scattered bait, and the short time bait is exposed contribute to low primary and secondary hazards to the birds (Tietjen 1976).

The actual process of applying rodenticide might also deter or scare cranes from the immediate area.

Changes in the structure and composition of vegetation after prairie dog poisoning occurs would not affect cranes, as they are only present on the ground locally while resting along migration routes.

The application of prairie dog rodenticide or sport shooting would not influence food available for these migrants.

Whooping cranes could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a whooping crane for a prairie dog. The fact that the whooping crane is a protected species should be a deterrent. There are very stiff penalties for killing or injuring an endangered species, and this is well known. Gunfire and other hunter activities might scare birds locally, but these potential effects are considered insignificant and discountable.

Cumulative effects to whooping cranes include collisions with fences and power lines. Lawless shooters sometimes kill birds.

DETERMINATION OF EFFECT AND RATIONALE FOR THE WHOOPING CRANE

Buffalo Gap N.G, Fort Pierre N.G, & Oglala N.G. The biological determination for whooping cranes under the preferred alternative is: *"may affect, not likely to adversely affect".*

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012, and it is anticipated that rodenticide could be applied to between 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures would not be applied to the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled.

It is possible that whooping cranes could ingest rodenticide bait in treated colonies. Realistically, the likelihood of whooping cranes landing where rodenticide was recently applied is so remote that it is considered a "discountable effect." The contingency plan (administrative record) is in place and consultation with the FWS would help reduce risks to cranes. If whooping cranes are sighted in an area where rodenticide is being applied, poisoning operation will be stopped until the cranes leave the area or are hazed out of the area. In addition, if rodenticide has been applied to an area where cranes have been seen, the area will be watched and any cranes that come near the rodenticide will be hazed until they leave the treated colony to ensure no birds are exposed to treated grain.

This alternative could increase the chance of a prairie dog shooter coming into contact with a whooping crane, but the effects will still be discountable (see the above discussion). Shooting within the one mile boundary management zone in Conata Basin will be used to augment the rodenticide treatment. Shooting does not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall whooping crane populations.

BALD EAGLE *Haliaeetus leucocephalus*

Distribution and Status. Bald eagles are mainly winter residents or migrating individuals in South Dakota, Wyoming, Colorado, and Nebraska, with few, but increasing, isolated nesting occurrences. It is a fairly common winter resident in suitable habitat along major riparian areas and river systems. In South Dakota, they are listed as an uncommon migrant (SDOU 1991), but there has been an increase in nesting pairs recently. In Nebraska, the first successful nest was documented in1992 on the Loup River, and successful nest have been reported each year since (Central Nebraska Public Power and Irrigation District 2004).

Habitat. The Bald Eagle is mostly found near water, primarily on river systems, large lakes, reservoirs and coastal areas. These birds are mainly scavengers, feeding on dead and dying fish, rodents, waterfowl, and other animals. Bald Eagles generally roost together in large mature trees surrounded by a buffer of smaller trees (Ashton and Dowd 1991).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA - Threatened	G4, N4B, N4N; Nebraska - S1; South Dakota - S1B, S2N

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. Nebraska and South Dakota are included in the Northern States Bald Eagle Recovery Zone. The recovery plan for the northern states was prepared in 1983. Although critical habitat has been designated, none of the areas is on or near NFS lands within the planning area. The general goals for delisting the species is 1,200 occupied breeding territories in the Northern States recovery zones. Delisting goals have already been met for the Northern States recovery zone (U.S. Fish and Wildlife Service 1995 and 1999).

Existing Conditions. Maps E-14 through E-17 displays the recorded locations of bald eagles on the various units of the NNF. There are no documented bald eagle nests on the NNF. In the spring of 2004, South Dakota Game Fish & Parks worked with the FWS, the National Park Service, and the Nebraska Game and Parks to perform aerial surveys to locate all of the active bald eagle nests in South Dakota. As of the end of April, there were 32 active bald eagle nests in South Dakota or on the Nebraska side of the Missouri River along the shared river boundary. Nests were found in Fall River and Lyman counties which are in the vicinities of the Buffalo Gap National Grassland & Fort Pierre National Grassland respectively (SDGFP Web Page 2004). Winter roost and spring nest surveys have been completed on the segments of the Cheyenne River that are part of the Buffalo Gap National Grassland. Individual bald eagles have been sighted but no winter roost concentrations or nests have been found (Hetlet 1994-2004).

Direct, Indirect, and Cumulative Effects. Bald eagles are present on the NNF after October 1 when the rodenticide treatments will take place, so they could be exposed to the zinc phosphide treated grain. They are not a granivorous species so direct consumption of the treated grain is not a expected. They are known to feed on carrion (Ashton and Dowd, 1991), so consumption of prairie dogs that have been poisoned is a possibility. This threat is lessened, because most prairie dogs poisoned with zinc phosphide treated grains die inside their burrows (Tietjen 1976). Tietjen (1976) cited two studies, one in which bald eagles were fed zinc phosphide killed nutria (*Myocaster coypus*); in the other, golden eagles (*Aquila chrysaetos*) were fed jackrabbits (*Lepus californicus*) that were killed with zinc phosphide. In both cases, the eagles showed no sign of secondary intoxication. Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Bald eagles could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a bald eagle for a prairie dog. It is always possible for an unethical prairie dog shooter to kill an eagle. The fact that the bald eagle is protected under both the ESA and the Bald and Golden Eagle Protection Act and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring an endangered species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area. They are known to feed on carrion (Ashton and Dowd, 1991), so consumption of prairie dogs that have

been shot is a possibility. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Because of abundant prey, it would be expected that bald eagles would frequent prairie dog colonies for hunting, but they are not dependent on prairie dogs or prairie dog colonies for their survival. Prey base for bald eagles could be reduced when prairie dog colonies are managed. In the short term, prairie dogs and other susceptible species are killed directly by the poison. In the long term, after repeated treatment, the habitat could convert from a prairie dog colony to a mixedgrass prairie. The densities of both small mammals and birds were less on mixed grasslands compared to prairie dog colonies in a study completed in South Dakota (Agnew 1983). This is not expected to affect bald eagle populations, considering that the most important habitat for the bald eagle is near lakes and large rivers where they feed mostly on fish (DeGraaf et al. 1991).

Other activities in the area that may affect bald eagles and bald eagle habitat include but are not limited to, livestock grazing, animal damage control, trapping, and hunting.

DETERMINATION OF EFFECT AND RATIONALE FOR THE BALD EAGLE

Buffalo Gap N.G, Fort Pierre N.G, & Oglala N.G. The biological determination for bald eagles under the preferred alternative is: *"may affect, not likely to adversely affect"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide would be applied to between 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be applied to the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled.

Considering that bald eagles do not eat grain and the threat of secondary poisoning is small, the direct effect of the increase in rodenticide use over the current program will be slight. The reduction in acreage of prairie dog colonies could be detrimental to bald eagles in the area because of the decreased prey base, but this can not be quantified. Considering a bald eagle is a wide ranging species and that prairie dog colonies make up a small component of their habitat, this decrease in prey base may affect a few individuals but will have little effect on overall populations.

This alternative will increase the chance of a prairie dog shooter coming into contact with a bald eagle, but the effects will still be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin may be used to augment rodenticide use. Shooting would not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall bald eagle populations.

Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Table 7. Summary of Determinations Effects for Federally Listed Species

Common Name	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.
MAMMALS			
Black-footed ferret (within experimental population area)	NLJ	--	--
BIRDS			
Whooping crane	MA-NLAA	MA-NLAA	MA-NLAA
Bald eagle	MA-NLAA	MA-NLAA	MA-NLAA

NE = No effect-- where no effect is expected.
MA-NLAA = May affect, not likely to adversely affect -- where effects are expected to be insignificant (immeasurable) or discountable (extremely unlikely to occur).
MA-LAA = May affect, likely to adversely affect -- where effects are expected to be adverse or detrimental.
NLJ = Not likely to jeopardize continued existence -- where effects are expected to be beneficial, insignificant (immeasurable), or discountable (extremely unlikely to occur).
LJ = Likely to jeopardize continued existence -- where effects are expected to reduce appreciably the reproduction, numbers, or distribution of the species.

VI. SENSITIVE SPECIES CONSIDERED IN THE ANALYSIS

Table 8 lists the sensitive species, or their habitats, that are located on the NNF and associated units (USDA Forest Service 2004).

Table 8. Region 2 Sensitive Species Located on NFS Lands in the Project Area

STATUS: SENSITIVE

	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. Pine Ridge R. D.	Nebraska N. F. Bessey R. D.	Samuel R. McKelvie N. F.
MAMMALS						
Fringed-tailed myotis	K	---	K	K	---	---
Townsend's big-eared bat	K	---	P	P		
Black-tailed prairie dog	K	K	K	K	K	P
Swift fox	K	K	K	---	---	---
BIRDS						
American bittern	K	K	K	---	P	K
Greater prairie-chicken	---	K	---	---	K	K
Yellow-billed cuckoo	K		K	K	K	K
Long-billed curlew	K	K	K	---	K	K
American peregrine falcon	K	K	K	K	P	P
Northern goshawk	P	P	P	P	P	P
Greater sage grouse	K	---	---	---	---	---
Northern harrier	K	K	K	K	K	K
Ferruginous hawk	K	K	K	K	K	K
Chestnut-collared longspur	K	K	K	---	K	K
McCown's longspur	---	---	K	---	---	---
Short-eared owl	K	K	K		K	K
Western burrowing owl	K	K	K	K	K	K
Mountain plover	K	---	---	---	---	---
Loggerhead shrike	K	K	K	K	K	K
Brewer's sparrow	K	---	---	---	---	---
Grasshopper sparrow	K	K	K	K	K	K
Trumpeter swan	K	---	---	---	---	K
Black tern	K	K	K	---	P	P
Lewis's woodpecker	P	---	K	K	---	---
AMPHIBIANS						
Plains leopard frog	K	K	K	K	K	K
Northern leopard frog	K	K	K	K	K	K
FISHES						
Sturgeon chub	K	---	---	---	---	---
Pearl dace	---	---	---	---	P	P
Finescale dace	---	---	---	---	P	P
Plains minnow	P	P	P	---	---	---
Flathead Chub	K	---	K	---	K	K

	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.	Nebraska N.F. Pine Ridge R. D.	Nebraska N. F. Bessey R. D.	Samuel R. McKelvie N. F.
INVERTEBRATES						
Regal fritillary butterfly	K	K	---	---	K	---
PLANTS – Ferns & Allies						
Dryopteris carthusiana	---	---	---	---	P	K
PLANTS – Monocots						
Carex diandra	---	---	---	---	P	P
Cypripedium parviflorum	---	---	---	---	P	P
Eriophorum gracile	---	---	---	---	P	P
Liparis loeselii	---	---	---	---	P	P
Schoenoplectus hallii	---	---	---	---	P	P
PLANTS – Dicots						
A*stragalus barrii*	K	---	P	---	---	---
Eriogonum visheri	K	---	P	---	---	---
Utricularia minor	---	---	---	---	P	P

K = Known occurrence in vicinity; date of last observation indicates that species still occurs in area,
P = Possible but unconfirmed occurrence,

SPECIES ELIMINATED FROM FURTHER ANALYSIS

All species eliminated from further analysis have been determined to have a "no impact" biological determination.

Screen 1 (Importance of Area)

GREATER PRAIRIE CHICKEN *Tympanuchus cupido*

Buffalo Gap N.G & Oglala N.G.

Rationale: The Buffalo Gap National Grassland & Oglala National Grassland are outside of the current distribution of the greater prairie chicken (Svedarsky et al. 2003).

AMERICAN PEREGRINE FALCON *Falco peregrinus*

Rationale: Occurrence of this species on or near the planning units is highly incidental, unpredictable and limited to migrants passing through these areas. Potential and suitable nesting habitat within the planning area either does not exist or is negligible.

NORTHERN GOSHAWK *Accipiter gentilis*

Rationale: Occurrence of this species on or near the planning units is highly incidental, unpredictable, and currently limited to migrants passing through these areas. If breeding is

confirmed in the future on or near these areas, this biological evaluation will be revisited and revisions to management direction considered.

GREATER SAGE GROUSE *Centrocercus urophasianus*

Fort Pierre N.G. & Oglala N.G.

Rationale: The Fort Pierre National Grassland & Oglala National Grassland does not have enough sagebrush habitats to sustain a sage grouse population.

MCCOWN'S LONGSPUR *Calcarius mccownii*

Buffalo Gap N.G & Fort Pierre N.G.

Rationale: The Buffalo Gap National Grassland & Fort Pierre National Grassland are outside of the current distribution of the McCown's longspur (Dechant et al 2003d).

MOUNTAIN PLOVER *Charadrius montanus*

Fort Pierre N.G.

Rationale: There has never been a documented occurrence of the mountain plover on, or in the vicinity of, the Fort Pierre National Grassland.

BREWER'S SPARROW *Spizella breweri*

Fort Pierre N.G.

Rationale: The Fort Pierre National Grassland does not have enough sage brush habitats to sustain a Brewer's sparrow population.

TRUMPETER SWAN *Cygnus buccinator*

Fort Pierre N.G. & Oglala N.G.

Rationale: The only trumpeter swan sightings have been on Buffalo Gap National Grassland and Samuel R. McKelvie National Forest.

LEWIS'S WOODPECKER *Melanerpes lewis*

Rationale: Occurrence of this species on or near the planning units is highly incidental, unpredictable. This species prefers open forest and woodland, often logged or burned, including oak, coniferous forest (primarily ponderosa pine, riparian woodland and orchards, less commonly in pinyon-juniper. Distribution closely associated with open ponderosa pine forest in western North America, and is strongly associated with fire-maintained old-growth ponderosa pine (NatureServe 2004). Potential and suitable nesting habitat within the planning area either does not exist or is negligible.

STURGEON CHUB *Macrhybopsis gelida*
PEARL DACE *Margariscus margarita*
FINESCALE DACE *Phoxinus neogaeus*
PLAINS MINNOW *Hybognathus placitus*
FLATHEAD CHUB *Platygobio gracilis*

Rationale: It is highly unlikely that any management direction affecting prairie dogs could significantly affect aquatic habitat and sensitive fish species that are native in the project area. While zinc phosphide is highly toxic to fresh water fish *(Kidd and James 1991*), it is highly unlikely that zinc phosphide could be carried from a prairie dog colony treated with the rodenticide to any perennial stream inhabited by any of these species in high enough concentrations to harm the fish. Factors that would prevent zinc phosphide from being carried from a treated prairie dog colony to a perennial stream include: Federal label restrictions allow bait to only be applied to active holes in limited quantities insuring most of the zinc phosphide treated grain would be quickly consumed by prairie dogs. The prairie dog colonies are located in intermittent drainages some distance from the streams and precipitation is low in the fall when the bait is being applied. If a precipitation event occurred that had potential to move water from the prairie dog colony to a perennial stream occupied by any of these fish, hydrolysis of bait would most likely occur before the bait reached the stream. Rodenticide treatment will occur around constructed water impoundments but these impoundments do not provide habitat for any of these sensitive fish species. USDA APHIS (1994) also concluded that there was no probable risk to aquatic habitats expected from the use of 2 percent zinc phosphide bait in prairie dog colonies.

SPINULOSE WOODFERN *Dryopteris carthusiana*

Rationale: *D. carthusiana* is a circumboreal species found in wet woods, moist wooded slopes, stream banks, swamps and fen carr (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

LESSER PANICLED SEDGE *Carex diandra*

Rationale: *C. diandra* is a circumboreal species found in wet meadows, springs and fens on floating and non-floating moss mats at 6100-8600 feet (Wyoming Natural Diversity Data Base 2004). These are habitats not affected by prairie dog management.

LESSER YELLOW LADY'S SLIPPER *Cypripedium parviflorum*

Rationale: *C. parviflorum* is found in Northern Lowland Forests, Northern Upland Forests and Shrub-Carrs (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

SLENDER COTTONGRASS *Eriophorum gracile*

Rationale: *E. gracile* occupies fens and boggy meadows (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

YELLOW WIDELIP ORCHID *Liparis loeselii*

Rationale: *L. loeselii* exists in aquatic and wetland environments such as perennially wet meadows and wet forests (Northern Prairie Wildlife Research Center 2004). These are habitats not affected by prairie dog management.

HALL'S BULRUSH *Schoenoplectus hallii*

Rationale: *S. hallii* inhabits moist sands to sandy-peaty substrates of shores and bottoms of shallow ephemeral ponds, sinkhole ponds and other sand prairie habitats where widely fluctuating water levels keep a sand substrate free of other vegetation (NatureServe 2004). These are habitats not affected by prairie dog management.

LESSER BLADDERWORT *Utricularia minor*

Rationale: *U. minor* is a circumboreal species found in open bogs, sedge meadows and marshlands and prefers calcium-rich shallow water (Northern Prairie Wildlife Research Center 2003). These are habitats not affected by prairie dog management.

Screen 2 - (Threats)

FRINGED MYOTIS *Myotis thysanodes*

Rationale: Typically, these bats roost in caves, natural rock crevices and abandoned buildings. Males, when netted, were frequently found to have dirt or clay like substances within there fur and crevices of their wing membranes suggesting day roosting in soft soil crevices (Tigner and Dowd Stukel 2003). They feed on insects and will not be affected by poisoned grain. There is no information to suggest there are more flying insects on prairie dog colonies or that bats use prairie dog burrows.

TOWNSEND'S BIG-EARED BAT *Corynorhinus townsendii*

Rationale: This bat is dependent year–round upon underground roosting sites (caves or mines) (Tigner and Dowd Stukel 2003). They feed on insects and will not be affected by poisoned grain. There is no information to suggest there are more flying insects on prairie dog colonies or that bats use prairie dog burrows.

AMERICAN BITTERN *Botaurus lentiginosus*

Rationale: American bitterns use tall, dense, shallow- or deep-water emergent vegetation in wetlands; native vegetation in wet meadows; and moderately tall, dense, native or tame vegetation in uplands adjacent to wetlands. American bitterns prefer relatively large (≥ 8 acres) wetlands, ranging in size from 8 to 550 acres (Dechant et al. 2003a). Prairie dogs will not be found in the wetland habitat.

YELLOW-BILLED CUCKOO *Coccyzus americanus*

Rationale: Yellow-billed cuckoos favor moderately dense thickets near watercourses, as well as second growth woodlands. They are mainly insectivorous and will not be affected by poisoned grain. Prairie dogs will not be found in woodland habitat.

LOGGERHEAD SHRIKE *Lanius ludovicianus*

Rationale: Loggerhead shrikes are generally found around brush, trees and fences. They are largely insectivorous, but do eat some small mammals, birds and reptiles (DeGraaf et al. 1991). They migrate in September (Tallman et al. 2002). Prairie dogs will not be found in woodland habitat.

BLACK TERN *Chlidonias niger*

Rationale: Black terns may be limited by wetland size as they were absent from Iowa marshes < 5 ha (12.3 acres) and were most common in wetlands > 20 ha (49.4 acres) (Naugle 2004). Prairie dogs will not be found in the wetland habitat.

NORTHERN LEOPARD FROG *Rana pipiens*
PLAINS LEOPARD FROG *Rana blairi*

Rationale: Northern and Plains leopard frogs are wetland obligates, using a wide variety of aquatic habitats, such as springs, slow streams, marshes, reservoirs, and lakes. It is most often found at sites with permanent water and rooted aquatic vegetation (NatureServe 2004). Prairie dogs would not be found in the aquatic habitat.

BARR'S ORPHACA (BARR'S MILKVETCH) A*stragalus barrii*

Rationale: *A. barrii* grows primarily on dry, rocky prairie knolls, hillsides and barren areas. Populations are found on sparsely vegetated badlands and breaks of whitish, sandy-silty calcareous at elevations of 3700-5700 feet (Wyoming Natural Diversity Data Base 2003). These are habitats not affected by prairie dog management.

VISHER'S ERIOGONUM (DAKOTA BUCKWHEAT) *Eriogonum visheri*

Rationale: *E. visheri* occupies barren shale and clay outcrops of badland formations. It occurs amidst relatively harsh growing conditions. Ground cover is lean, with a minimum of 50 percent bare ground, and more often an excess of 90 percent bare ground. Light is open, with minimal shading from surrounding geology. Erosion and deposition rates are high. Where the species occupies the badlands outwash, the slopes are low; where the species occupies the edges of alluvium the slopes are steep (NatureServe 2004). These are habitats not affected by prairie dog management. Prairie dogs may create conditions that are suitable for *E. visheri*, but would not normally colonize what is currently considered optimum suitable habitat for this species.

ANALYSIS OF EFFECTS – SENSITIVE SPECIES

BLACK-TAILED PRAIRIE DOG *Cynomys ludovicianus*

Distribution and Status. Throughout the Great Plains, the range of the prairie dog extends from southern Canada to northern Mexico (Higgins et al. 2000). The U.S. Fish and Wildlife Service (2004a) reported that state agencies currently estimate that prairie dog occupied habitat is approximately 1,842,000 acres. In Canada and Mexico, an additional 51,589 acres of prairie dog habitat exist as reported by the U.S. Fish and Wildlife Service in a news release dated August 12, 2004.

The U.S. Fish and Wildlife Service (2000) determined that listing of the black-tailed prairie dog was warranted but precluded by other higher priority listing actions. Later, the U.S. Fish and Wildlife Service (2004a) concluded that the black-tailed prairie dog does not warrant listing.

Habitat. This species occurs mostly on shortgrass and mixed grass prairie. Some populations are also found in the Nebraska Sandhills. Suitability of habitats for this species is enhanced by low vegetative cover and increased visibility to detect predators and enhance social behaviors. Because of this, these animals prefer areas with disturbed soils and/or grasslands grazed by cattle or bison. They typically colonize grasslands of a wide variety of soil types that are flat to gently rolling. They avoid wetlands and areas with high water tables. Hoogland (1995), Jones et al. (1983), Knowles (1982), and Clippenger (1989) were consulted for additional information on the habitat relationships of this species.

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G3, N3N4; Nebraska – S4; South Dakota – S4; Forest Service - Sensitive Species

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. The State of South Dakota has completed the final draft of a conservation and management plan for the prairie dog, pending approval by the state legislature. Other species assessments include "The Black-tailed Prairie Dog Conservation Assessment and Strategy" (Van Pelt 1999), "An Umbrella, Multi-state Approach for the Conservation and Management of the Black-tailed Prairie Dog, *Cynomys Ludovicianus*, in the United States" (Luce 2001) and "A Multi-State Conservation Plan for the Black-tailed Prairie Dog in the United States" (Luce 2003).

Existing Conditions. The black-tailed prairie dog is listed as a sensitive species in Region 2, which includes the project area. Prairie dog colonies occur on Fort Pierre National Grassland, Buffalo Gap National Grassland and Oglala National Grassland. Approximate colony acreage for each unit is shown in Table 1.

There are no prairie dog colonies on the Samuel R. McKelvie National Forest and Pine Ridge Ranger District, and these areas are not included in any of the analyses. There is a small prairie

dog population consisting of several small colonies on the Bessey Ranger District, but as indicated in the Northern Great Plains Biological Assessment and Evaluation, the long-term persistence of this population is uncertain because of marginal habitat capability. Because of this uncertainty, no prairie dog rodenticide use or other management tools will be considered or authorized for this area. Management of this prairie dog population will be limited to annual monitoring to determine population status and trend.

Plague is currently not known to occur on any prairie dog colonies within lands administered by the NNF. Recently, plague was confirmed in a prairie dog in western Custer County, South Dakota in September of 2004 near the border of Wyoming and South Dakota. Prairie dogs are highly susceptible to plague and it is considered to be a serious threat to the persistence of local prairie dog populations (USDA Forest Service 2001b). Additional plague locations from subsequent surveys have not been identified to date, and monitoring is expected to continue into the foreseeable future (South Dakota Department of Game, Fish and Parks 2004). No additional information about this plague incident is known at this time. The potential for plague to occur on prairie dog colonies within lands administered by the NNF and the potential impacts are unknown, but it is acknowledged that plague can have dramatic impacts on prairie dog populations. The U.S Fish and Wildlife Service (2000) stated that the majority of suitable, plague-free prairie dog habitat occurs in South Dakota.

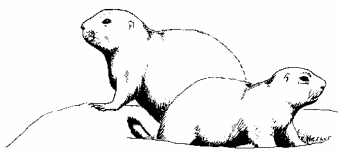
Direct, Indirect and Cumulative Effects. The prairie dog is the target species for the rodenticide use programs outlined in the proposed action. The rodenticide is 2 percent zinc phosphide bait (oats). When proper procedures are followed, efficacy of zinc phosphide bait is typically 90 percent or higher (South Dakota Department of Agriculture et al. 1994). Where other active colonies are nearby, prairie dog populations in colonies treated with rodenticide commonly recover to pre-treatment levels within 3 to 5 years (Knowles 1986, Uresk and Schenbeck 1987).

As a management tool, the recreational shooting of prairie dogs has potential to limit prairie dog populations (Vosburgh and Irby 1998). Prairie dog shooting can affect prairie dog populations and densities. As a minimum, it's suspected that shooting of prairie dogs can significantly reduce prairie dog densities (Vosburg and Irby 1998) and indefinitely maintain reduced densities in smaller isolated colonies (Knowles 1987). Shooting prairie dogs in colonies that have been previously poisoned could likely prevent or slow population recovery in those colonies. In a study conducted in eastern Wyoming, recreational shooting increased the alertness and decrease above ground activity of black-tailed prairie dogs, which in turn reduced the time spent foraging and resting. This resulted in a decrease in body condition of surviving adult prairie dogs, reduced pregnancy rate and reproductive output (Pauli 2005).

Vosburgh and Irby (1998) estimated prairie dog population declines to be approximately 2 times higher and the minimum survival to be 22 percent lower in hunted versus non-hunted prairie dog colonies. It is estimated that shooting reduces the number of prairie dogs by 2.25 per acre per year as derived from reports by Schenbeck (1994) for the Conata Basin/Badlands area. A summary from the South Dakota Department of Game, Fish and Parks (2001), states that, on non-tribal lands, recreational shooters killed 1.52 million prairie dogs in 2001 of which 86.3 percent were shot on private land. Shooting by residents occurs throughout the year and mostly in the summer, while nonresidents do most of their shooting in May, June or October depending on the type of license they possess (South Dakota Game, Fish and Parks 2001). Vosburgh and

Irby (1998) noted an increase in prairie dog hunters during September of 1994 explaining that some hunters include prairie dogs among other species they specifically planned to hunt.

Cumulatively, the use of prairie dog rodenticide and limited regulated shooting would likely be expected to keep prairie dog populations at low levels in areas where both are occurring. The impacts of shooting may be a contributing factor to prairie dog population fragmentation, in that recovery of colonies could be delayed or precluded by other factors, including rodenticide use (U.S. Fish and Wildlife Service 2000).



DETERMINATION OF EFFECT AND RATIONALE FOR THE BLACK-TAILED PRAIRIE DOG

Fort Pierre N.G. The biological determination for prairie dogs under the preferred alternative is: "*may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing"*.

Rationale: This alternative results in intermediate prairie dog colony acreages and rodenticide use levels (Table 2).

The Fort Pierre National Grassland currently has approximately 1,340 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate up to approximately 470 acres of prairie dog habitat within the 0.25-mile boundary management zone leaving approximately 870 acres remaining. The predicted range of prairie dog colonies across the grassland is predicted to be between 1,100 and 1,400 acres by the year 2012, suggesting that long-term viability of the prairie dog population on the unit is likely.

Given the predicted range over by the year 2012 of 1,100 and 1,400 acres of prairie dog colonies, the LRMP direction to establish one or more prairie dog complexes in the northeast portion of the grassland would likely be achieved.

Buffalo Gap N.G: The biological determination for prairie dogs under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing"*.

Rationale: This alternative results in intermediate prairie dog colony acreages and rodenticide use levels (Table 2).

Collectively, the Buffalo Gap National Grassland has approximately 26,030 acres of prairie dog colonies. Under this alternative, 10,450 acres will be subject to rodenticide use, and it is predicted that there will be between 27,000 and 38,000 acres of active prairie dog colonies on

the Buffalo Gap National Grassland by the year 2012. In addition, some limited and regulated prairie dog shooting may also be allowed within the half-mile zone along private and tribal boundaries in the Conata Basin Black-Footed Ferret Reintroduction Habitat area. Under this alternative, the Forest Service would not consider limiting prairie dog shooting in the Smithwick Black-Footed Ferret Reintroduction Habitat area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service. Given the predicted range of 27,000 and 38,000 acres of prairie dog colonies remaining under this alternative, long-term viability would be considered likely.

Oglala N.G. The biological determination for prairie dogs under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing".*

Rationale: This alternative results in intermediate prairie dog colony acreages and rodenticide use levels Table 2.

The Oglala National Grassland currently has approximately 2,220 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate up to approximately 1,050 acres of prairie dog colonies within the half-mile zone leaving approximately 1,170 acres. The range of prairie dog colonies across the grassland is predicted to be between 1,400 and 1,800 acres by the year 2012.

The remaining colonies of approximately 1,170 acres would likely meet the LRMP direction to establish a prairie dog colony complex. Long-term viability of prairie dogs on the grassland is likely given the predicted range of 1,400 and 1,800 acres by the year 2012.

SWIFT FOX *Vulpes velox*

Distribution and Status. The swift fox is native to the short grass and mixed grass prairie in the Great Plains region of North America. It was considered common or abundant in much of its original range until the late 1800's to the early 1900's. From this period to the 1950's, the swift fox was thought to be extirpated in Kansas, Montana, and Canada, and there were no reported sightings in Oklahoma, Wyoming, South Dakota, North Dakota, and Nebraska (U.S. Fish and Wildlife Service 2000). Beginning in the 1950's, swift fox numbers appeared to be recovering over much of their former range.

Habitat. This species inhabits open prairies, plains and shrubby desert areas. It is found in areas with gently rolling hills or undulating topography. Swift fox prefer short to midgrass prairies and loamy soils and utilize dens year around (Harrison and Whitaker-Hoagland 2003). Soil type might be a better predictor of swift fox habitat suitability than vegetation type (Harrison and Whitaker-Hoagland 2003). Swift fox select loamy soils over clayey soils for den sites. This species is an opportunistic feeder on small mammals, birds, insects, berries, vegetation and carrion (Ashton and Dowd 1991). Predation by coyotes appears to be the most common mortality factor for swift fox (Allardyce & Sovada 2003) (Stephens & Anderson 2005). The key factor in swift fox management is to provide suitable habitat where the swift fox can obtain prey while avoiding predation.

Uresk and Sharps (1986) found swift fox in close association with prairie dog colonies in Shannon County, South Dakota. Other studies have found swift fox to thrive without prairie dog colonies (Allardyce & Sovada 2003). Size of prairie dog complexes could be very important in determining whether or not swift fox will use prairie dog colonies. Prairie dog colonies, because of the abundant prey, attract many predators. There is a possibility (although not documented in the literature) that swift fox could actually avoid the small prairie dog colonies because the abundance of predators could outweigh the benefits of an increased forage base. Allardyce & Sovada (2003) state "It is apparent from the studies done by the Swift Fox Conservation Team and the individual states during the past 3 to 5 years that swift fox populations in today's altered landscape are not necessarily dependent on the availability of prairie dog colonies and complexes." There is one prairie dog colony near the swift fox population that is on the Buffalo Gap National Grassland near Ardmore, South Dakota. None of the bait stations within 1.5 miles of this prairie dog colony had swift fox tracks in them during the 2003-4 survey (Hetlet 1991-2004).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G3, N3; Nebraska – S2; South Dakota – S1; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. Conservation assessment and conservation strategy for the swift fox was prepared in 1997 (Kahn et al. 1997). The goal of the strategy is to maintain or restore swift fox populations within each state to provide spatial, genetic, demographic structure of the United States swift fox population throughout at least 50 percent of the suitable habitat available, to ensure long term species viability and to provide species management flexibility. Nebraska and South Dakota are included in the assessment.

Existing Condition. Maps E-18 through E-21 displays the recorded locations of swift fox on the various units in the project area. Swift fox have been located on all three of the national grasslands. The swift fox that have been sighted on the Fort Pierre National Grassland are a result of a reintroduction effort initiated by the Turner Endangered Species Fund (TESF) on the Bad River Ranch west of Fort Pierre National Grassland (Map E-18). The swift fox that have been sighted on the east half of the Buffalo Gap National Grassland (Map E-19) are a result of a reintroduction effort initiated by the Badlands National Park. On the Oglala National Grassland (Map E-20) there have been incidental sightings of swift fox, but there is no evidence of a resident population.

Swift fox populations have blinked in and out on different areas of the west half (Map E-21) of the Buffalo Gap National Grassland (Hetlet 1991-2004) (Hodorff 2004). The only population that has persisted is located near Ardmore, South Dakota. The area is identified in the LRMP as 3.64 Special Plant and Wildlife Habitat: Swift Fox Management Area. This area is referred to as the Ardmore swift fox population.

Direct, Indirect, and Cumulative Effects. Swift fox are a year-round resident of the project area. They are in the area after October 1 (which is when the prairie dog colonies will be treated

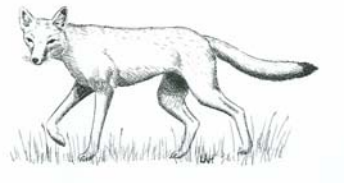
with rodenticide) and could be exposed to zinc phosphide treated grain. They are not a granivorous species, so direct consumption of the treated grain is not an issue. They are known to feed on carrion (Ashton and Dowd, 1991). Schitoskey (1975) reported that if kit fox (*Vulpes macrotis*) found surface kills that were the result of a rodenticide, there is little doubt that they would eat the carcasses or return them to the den to feed their young. This threat is lessened because most prairie dogs poisoned with zinc phosphide treated grains die inside their burrows (Tietjen 1976). Schitoskey (1975) used the desert kit fox (*Vulpes macrotis arsipus*) to determine effects of zinc phosphide. The LD_{50} for kit fox was 93 (62-140) mg/kg. When kit foxes were fed kangaroo rats (*Dipodomys ordii*) killed with zinc phosphide, there was no secondary poisoning. To put it into perspective, if a kangaroo rat swallowed or stuffed its cheeks with 1 g of the most concentrated zinc phosphide bait, it would theoretically contain 16.4 mg of the chemical. Kit foxes survived repeated feedings of rats dosed with about 29 times this amount of zinc phosphide (Schitoskey 1975). Secondary poisoning of swift fox while using zinc phosphide treated oats is not an issue.

Swift fox could be shot or injured by prairie dog shooters. The fact that swift fox is somewhat similar in appearance to a coyote pup (especially in the spring when the coyote pups are small), could increase the odds of a swift fox being killed or injured by a prairie dog shooter and unethical individuals may intentionally shoot at a swift fox while shooting prairie dogs. The fact that the swift is a protected species in the states of South Dakota and Nebraska and it is against the law to kill or harass them should be a deterrent. Also, swift fox are primarily nocturnal (Allardyce & Sovada 2003), diminishing the chance of a shooter seeing a swift fox. Gunfire and other hunter activities may scare swift fox locally, but this will not be a factor concerning their population viability on the area. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Because of abundant prey, swift fox might frequent prairie dog colonies for hunting. The prey base for swift fox would be reduced when prairie dog colonies are treated with a rodenticide. Swift fox are not dependent on prairie dogs or prairie dog colonies for their survival (Allardyce & Sovada 2003). The generalist foraging behavior of swift fox makes food an unlikely limiting factor (Allardyce & Sovada 2003).

If the prairie dogs are eliminated, the vegetation within the colony would revert from a short grass community to a mixedgrass community. Swift fox can do well in short or mixedgrass prairie (Allardyce & Sovada 2003, Uresk et al. 2003). It is doubtful that this shift in vegetation will have much effect.

Other activities in the area that may affect swift fox and swift fox habitat include but are not limited to, livestock grazing, animal damage control, trapping, & hunting.



DETERMINATION OF EFFECT AND RATIONALE FOR THE SWIFT FOX

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for swift fox under the preferred alternative is: "m*ay adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction habitat until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Considering that swift fox will not eat the grain, and the threat of secondary poisoning is small, the direct effect of the increase in rodenticide use over the current program will be slight. The reduction in acreage of prairie dog colonies could be detrimental to swift fox in the area because of the decreased prey base, but this can not be quantified. Considering that the avoidance of predators may be more important to swift fox survival than obtaining food, the increase in predators around a prairie dog colony may actually be a deterrent, so the decrease in prairie dog acres may not be a problem. Clearly more research needs to be done on swift fox / prairie dog relationships.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a swift fox (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

GREATER PRAIRIE CHICKEN *Tympanuchus cupido*

Distribution and Status. Before European settlement, greater prairie chicken generally inhabited tall grass prairies (Johnsgard 1983) in the central and northeast United States. Today they occupy less than 10 percent of this maximum historic range (Johnsgard 1983).

Habitat. Life requisites that potentially limit greater prairie chicken populations are the lack of tall and dense grass nesting cover or the lack of winter food (Prose 1985). The most important aspect of secure nesting cover lies in its structure rather than in plant species composition (Eng et al. 1988). A study on Fort Pierre National Grassland showed that prairie chickens generally nest at least 200 ft. from fence lines (Rice and Carter 1982). Of all the grouse, prairie chickens are the most granivorous (Hamerstrom 1950). High-energy grain from row-crops is an important winter food, and the birds may travel many miles to utilize it (Fredrickson 1990). This prairie grouse is a resident of Fort Pierre National Grassland (Peterson 1991) and the Bessey unit in the Nebraska Sand Hills (Mollhoff et al. 1993).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G4, N4; Nebraska – S3S4; South Dakota – S4; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. Fort Pierre National Grassland and Bessey Ranger District have high-structure grass for prairie chicken cover. Grassland on the former is interspersed with private grain fields, and the latter has prairie that supports many food-bearing forbs and shrubs, such as rose and poison ivy. On the Fort Pierre National Grassland, many spring prairie chicken courtship display grounds have been noted close to prairie dog colonies (Fort Pierre National Grassland files) (Map E-22).

This grouse is a management indicator species for the units mentioned above, as well as a Region 2 sensitive species. Prairie chickens are game birds in both South Dakota and Nebraska.

Direct, Indirect, and Cumulative Effects. Fort Pierre National Grassland is the only area that would be affected by rodenticide use and reduced prairie dog populations near active prairie chicken habitat.

Prairie chickens eat grain, and the potential exists for them to ingest zinc phosphide treated oats. Observations of wild birds in a wide variety of situations where this rodenticide had been placed have shown that some birds can be killed and others are unaffected (Tietjen 1976). However, prairie dog colonies are not preferred prairie chicken feeding areas, which lowers the probability of bait ingestion. Also, if safety precautions and label directions are followed during application, operations can be carried out without undue risks to nontarget species (Tietjen 1976). Factors that contribute to lower hazards are the food habits of nontarget species, the relatively low concentration of zinc phosphide in the bait, the small amount of bait applied per unit area, the widely scattered bait distribution pattern and the short time most of the bait is exposed (Tietjen 1976). Disturbances created by crews applying rodenticide may temporarily displace prairie chickens from the vicinity of the treated colonies, further reducing non-target risks.

Removing prairie dogs from an area could produce high-structure nesting cover if the range site is productive and if subsequent grazing is not too heavy. Some range sites with prairie dog colonies, such as thin claypans, are probably not capable of producing enough grass cover to provide secure nest sites for prairie chickens.

DETERMINATION OF EFFECT AND RATIONALE FOR THE GREATER PRAIRIE CHICKEN

Fort Pierre N.G. The biological determination for greater prairie chickens under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: The Fort Pierre National Grassland currently has 1340 acres of prairie dog colonies on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate approximately 470 acres of prairie dog colonies within the 0.25-mile zone leaving nearly 870

acres of colonies remaining. The predicted range of prairie dog colonies across the grassland is estimated to be between 1,100 and 1,400 acres by the year 2012.

Rodenticide application could allow sod-bound grass on the more productive range sites to revert to a mixture of grasses that may produce some additional high and dense nesting and brood-rearing cover for greater prairie chickens over the long-term. In the long term, the number of active acres of prairie dog colonies will undergo a small increase and there will be no detectable change in habitat for the prairie chicken.

Although the probability is remote, individual prairie chickens could die from ingesting rodenticide bait.

LONG-BILLED CURLEW *Numenius americanus*

Distribution and Status. Long-billed curlews breed from interior British Columbia and southern Alberta through southern Manitoba, south to central California and east to western North Dakota, central South Dakota, central Nebraska, western Kansas, northeastern New Mexico, and northern Texas (Dechant et al. 2003b). All of the units of the NNF are within there breeding range.

Long-billed curlews are ranked as secure both globally and nationally. Population declines in the western U.S. are local, not widespread, and they are apparently declining in Utah (Nature Serve 2003). In South Dakota, they are listed as a fairly common summer resident in suitable habitat west of the Missouri River (SDOU 1991).

Habitat. Long-billed curlews use expansive, open, level to gently sloping or rolling grasslands with short vegetation such as shortgrass or recently grazed mixed-grass prairie. Proximity to water may be an important factor in habitat selection (Dechant et. al. 2003b). This type of habitat certainly exists within prairie dog colonies, especially in areas that have recently been colonized.

Grassland structure is an important component of long-billed curlew habitat. Long-billed curlews in Nebraska used areas in which 75 percent of the total vertical vegetation density (number of plant contacts with a thin rod inserted vertically into the canopy) was found at heights <10 cm (Dechant et. al. 2003b). Preference for areas in which vegetation density is concentrated near ground level may be important in terms of the feeding behavior of long-billed curlews or their ability to see potential predators.

Long-billed curlew's breeding season diet includes insects (especially grasshoppers, but also beetles and butterflies; and other invertebrates, berries, toads, bird eggs, and nestling birds. Curlews forage in grasslands, cultivated fields, stubble fields, wet meadows, prairie dog (*Cynomys*) colonies, and occasionally along wetland margins (Dechant et. al. 2003b). The SDOU (1991) states the fall migration occurs first week of August with the latest date a long-billed curlew was seen in South Dakota as Oct 25.

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G5, N5B, N5N; Nebraska – S3; South Dakota – S3B; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. Maps E-23 through E-26 displays the recorded locations of long-billed curlews on the various units of the NNF. They have been found on all of the National Grasslands of the NNF.

All of the grassland areas of the Buffalo Gap National Grassland, Fort Pierre National Grassland, & Oglala National Grassland are potential long-billed curlew habitat depending on the slope, potential production & grazing intensity. The long-billed curlew, in most cases, will be found on the moderate to heavily grazed sites. It is not uncommon to find them in and around prairie dog colonies (Maps E-23 through E-26)

Direct, Indirect, and Cumulative Effects. The long-billed curlew feeds primarily on insects and other invertebrates. They will not eat the poison grain and are not susceptible to being poisoned by the zinc phosphide treated grain. The SDOU (1991) states the fall migration for them occurs first week of August with the latest date a long-billed curlew was seen in South Dakota as Oct 25. It would be rare for a long-billed curlew to be present after October 1st when the rodenticide application will take place.

Long-billed curlews could be killed or injured by prairie dog shooters, log-billed curlews are but this would be rare and deliberate, since it is unlikely to mistake a long-billed curlew for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a curlew. The fact that the long-billed curlew is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

The long-billed curlew is not dependent on prairie dog colonies for its existence. Breeding habitat for the long-billed curlew is low to moderate structure midgrass prairie. This habitat can be found on or off prairie dog colonies depending on many factors, like precipitation, soils, etc. On the NNF the overriding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines within the LRMP establish levels at which grassland structure will be managed by geographic area.

DETERMINATION OF EFFECT AND RATIONALE FOR THE LONG-BILLED CURLEW

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for long-billed curlew under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction habitat until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

The long-billed curlew feeds primarily on insects and other invertebrates. They do not eat the grain and are not susceptible to being poisoned by the zinc phosphide treated grain. Also, the majority of the birds migrate out of the study area before October 1 (the first day rodenticides can be applied).

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a long-billed curlew, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. This will not have any measurable effect on overall long-billed curlew populations.

Rodenticide use and reduced prairie dog populations could allow sod-bound grass on the more productive range sites to revert to a mixture of grasses that may produce some additional high cover that may be avoided by long-billed curlews over the long-term.

GREATER SAGE GROUSE *Centrocercus urophasianus*

Distribution and Status. Currently, greater sage grouse occur in somewhat disjunct ranges within suitable sagebrush habitats in central Washington through southern Idaho, much of Montana, extreme southeastern Alberta and southwestern Saskatchewan, south to the southwestern corner of North Dakota, northwestern and southwestern South Dakota, most of Wyoming, western Colorado, and portions of Utah, and west to Nevada, extreme eastern California, and southeastern Oregon (Rowland 2004).

The sage grouse is relatively common in the core of its range, but range has contracted significantly (now extirpated in five states and one province). Populations have declined 45 to 80 per cent since the 1950s and by an average of 33 per cent across ten states (essentially rangewide) since 1985. The birds are threatened by loss, fragmentation and degradation of sagebrush habitat (NatureServe 2004). In South Dakota, they are listed as a locally uncommon permanent resident of the far west on the sagebrush prairies (Tallman et al. 2002). The only occurrence on the NNF is in the Fall River West Geographic Area (FRWGA).

Habitat. Sagebrush shrubland is the habitat of the sage grouse. Sagebrush is the primary food of sage grouse during the summer and is almost the exclusive diet during winter. Almost all sage grouse activity occurs in sagebrush or in meadows or openings adjacent to sagebrush.

Sage grouse are unique in that they lack a muscular gizzard like other gallinaceous birds and cannot grind and digest seeds (Wallestad 1975), so they feed exclusively on soft material, mostly sagebrush during the winter and a combined diet of sagebrush and various forbs during the spring and summer. Juveniles initially consume a diet of forbs and invertebrates.

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G4, N4; Nebraska – S1; South Dakota – S2; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. The only sagebrush habitat large enough to have a population of sage grouse occurs in the West western part of the Buffalo Gap National Grassland. Within this geographic area, the LRMP identifies a 45,760 acre area as 3.64 Special Plant and Wildlife Habitat: Sage Grouse. Within this area, the sage grouse is identified as a management indicator species. Sage grouse sightings on the west half of the Buffalo Gap National Grassland are displayed in Map E-27. One sage grouse display ground has been monitored in the area since 1991, and the maximum number of birds observed on the display ground each year is listed below.

Year	# of Birds
1991	17
1992	8
1993	4
1994	4
1995	6
1996	10
1997	10
1998	11
1999	14
2000	11
2001	4
2002	4
2003	0
2004	0

No birds have been seen on the display ground since 2002.

Direct, Indirect, and Cumulative Effects. FRWGA is the only area that would be affected by rodenticide use and reduced prairie dog populations near sage grouse habitat.

Sage grouse are a year-around resident of the grasslands, so they could be exposed to the zinc phosphide treated grains. They lack a muscular gizzard and cannot grind and digest seeds. They do not eat grain and are not susceptible to being poisoned by the zinc phosphide treated grain.

Sagebrush shrubland is the habitat of the sage grouse. Prairie dogs avoid the sagebrush habitat because it is difficult for them to cut it down, their viewing distance is reduced and they are more susceptible to predators. One of the prairie dog colonies in this area is surrounded by sage brush and it has not appreciably expanded in the last 15 years.

DETERMINATION OF EFFECT AND RATIONALE FOR THE SAGE GROUSE

Buffalo Gap N.G. The biological determination for sage grouse under the preferred alternative is: *"no impact"*.

Rationale: Sage grouse habitat only occurs on the FRWGA. The rest of the lands within the project area do not have enough sagebrush habitats to support a sage grouse population

Sage grouse are a year-around resident of the FRWGA, so they could be exposed to the zinc phosphide treated grains. They lack a muscular gizzard and cannot grind and digest seeds. They will not eat grain and are not susceptible to being poisoned by the zinc phosphide treated grain.

With this alternative, it is predicted that there could be between 600 and 800 acres of prairie dog colonies on the FFRD WGA by 2012. This is less than 1 percent of the total area. Even if the prairie dogs did invade the sagebrush area, this would not be enough to effect the sage grouse population.

NORTHERN HARRIER *Circus cyaneus*

Distribution and Status. These hawks breed in the northern United States and Canada, and winter in the eastern and southern U.S., and in the western coastal mountains, south through Mexico and Central America (MacWhirter and Bildstein 1996) (Dechant 2003g). They are year-round residents of the central plains (MacWhirter and Bildstein 1996). Northern harriers are summer residents and rare winter visitors on Fort Pierre National Grassland, Buffalo Gap National Grassland, and Oglala National Grassland (Peterson et al. 1991, Graupman et al. 1991, Peterson 1993). They are residents of the Nebraska Sand Hills, including the Bessey Ranger District (Mollhoff et al. 1993).

Habitat. This slim hawk hunts by coursing low over the prairie, catching its prey with a sudden pounce (Sibley 2000). In summer, its foods are small- and medium-sized mammals, primarily rodents, birds (chiefly passerines and small waterbirds), reptiles, and frogs (MacWhirter and Bildstein 1996). In the north during winter, they consume *Microtis* voles almost exclusively (MacWhirter and Bildstein 1996). After killing, small mammals are sometimes eviscerated (MacWhirter and Bildstein 1996). Although harriers can nest in suitable marsh vegetation, they apparently preferred upland sites in North Dakota (Dubbert and Lokemoen 1977). But during the South Dakota Breeding Bird Atlas surveys, 60 percent of harrier nests were in marshes (Peterson 1995). In seeded fields in north central South Dakota and central North Dakota, harriers preferred tall, dense cover as upland nesting sites (Dubbert and Lokemoen 1977). They placed 52 percent of nests in cover more than about 24" tall. Forty-one percent of nests were in cover from about 12 in. to 24 in. tall. The nests were well concealed from the sides but open above. Undisturbed grasslands, especially with western snowberry (*Symphoricarpos occidentalis*) shrubs, were the locations for over half of 129 nests (Kantrud and Higgins 1992).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G5 N5B, N5B; Nebraska – S3; South Dakota – S5B; Forest Service – Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. Maps E-28 through E-29 displays recorded N. harrier sightings on the project areas. These birds have recently been added to the sensitive species list and are fairly common on all of the National Grasslands.

Northern harriers are likely to occur across all areas being considered for prairie dog management, and these raptors are known to be associated with prairie dog colonies in western South Dakota (Sharps and Uresk 1990). Since prairie dog colonies have short vegetation, and harriers use tall, dense vegetation for placing their nests, the hawks are most likely to use prairie dog colonies as sites to hunt for food.

Direct, Indirect, and Cumulative Effects. Harriers are likely to be present in some areas when rodenticide baits are applied. The hawks do not eat grain so they would not be at risk from direct poisoning. The possibility of secondary poisoning is remote, since most poisoned prairie dogs die in their burrows. Harriers are also known to eviscerate prey before eating, thus removing the dead prairie dog's digestive tract where residual poison is likely to be found. Bald eagles, golden eagle, and great-horned owls were fed zinc phosphide-poisoned prey during lab studies and showed no negative physiological symptoms (USDA Animal Plant and Health Inspection Service 1994). Crews applying rodenticide might disturb harriers, but this would be a temporary occurrence. The birds would continue hunting for food nearby.

An indirect effect of rodenticide use would be the loss of prairie dog colonies as foraging areas, where harriers could prey on vertebrates or invertebrates among the short grass cover. With the prairie dogs removed from the area, however, the grass would likely grow taller. Eventually litter would build up, and the parts of the area would become habitat for voles. Rather than creating a net loss of foraging areas for northern harriers, prairie dog rodenticide treatment would substitute one type of prey for another. If cattle stocking were light on areas where prairie dogs had been treated, tall, dense cover would develop and could be used as harrier nesting cover.

Northern harriers could be shot or injured by prairie dog shooters, but this would be rare and deliberate since they don't regularly sit on prairie dog mounds and it would be difficult to mistake them for prairie dogs, even at a distance. It is always possible for an unethical prairie dog shooter to kill a harrier. The fact that the northern harrier is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Shooting would reduce the number of prairie dogs in a colony. Harriers feed mostly on animals smaller than prairie dogs, and these food items would not be affected by the change in prairie dog numbers. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Cumulative effects that could harm harriers include plowing prairies to produce mono-typical croplands and draining wetlands that the birds use for nesting or foraging. Over-grazing by livestock results in low grass structure with no cover or litter for voles, which are an important harrier food source. Intentional shooting of harriers by individuals who think they are reducing predation on game birds or mammals also occurs.

DETERMINATION OF EFFECT AND RATIONALE FOR THE NORTHERN HARRIER

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for northern harriers under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone.

Harriers are likely to be present in some areas when rodenticide is applied. The hawks do not eat grain so they would not be at risk of primary poisoning. The possibility of secondary poisoning is remote.

Prairie dog colonies provide harrier prey. However, grass structure is likely to increase when prairie dogs are reduced, which provides voles for prey and, possibly, potential nesting sites. Positive and negative aspects of prairie dog management to harriers would tend to offset.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a northern harrier, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. There will be no measurable effect on overall northern harrier populations. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

FERRUGINOUS HAWK *Buteo regalis*

Distribution and Status. The ferruginous hawk is an open-country raptor that inhabits grasslands, shrub steppes, and deserts in the central and western part of North American (Bechard and Schmutz 1995)(Jasikoff 1982). These hawks are a summer resident and rare winter visitor on all the units included in this evaluation (Peterson et al. 1991, Graupman et al. 1991, Mollhoff et al. 1993, and Peterson 1993). The species was petitioned for listing under the Endangered Species Act in 1991 but was rejected (Ure et al. 1991). Cultivation of the prairie, grazing, poisoning small mammals, along with mining and fire in nesting habitats, were factors that caused ferruginous hawk declines (Olendorff 1993), with cultivation being the most serious.

Habitat. Ferruginous hawks are well adapted to semiarid grasslands of the Great Plains and are specialized for hunting grassland rodents and lagamorphs (Johnsgard 1990). Their primary prey are rabbits (*Lepus* spp.), ground squirrels (*Spermophilus* spp.), and prairie dogs (*Cynomys* spp.) (Bechard and Schmutz 1995). After killing, prey is eviscerated routinely, which may retard degradation of the carcass (Schmutz et al. 1989). These hawks place their nests-- constructed of sagebrush stems, sticks, twigs, or ground debris (Bechard and Schmutz 1995)--in trees and

shrubs (49 percent), on cliffs (21 percent), on utility structures (12 percent), or on ground outcrops (10 percent) (Olendorff 1993).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G4, N4B, N4N; Nebraska – S2; South Dakota – S4B; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. Maps E-30 through E-33 displays recorded ferruginous hawk sightings on the project area. Ferruginous hawk observations have been well distributed across Oglala National Grassland, Buffalo Gap National Grassland and Fort Pierre National Grassland. The birds are seen both on and off prairie dog colonies, although the majority of observations have been off colonies.

Nests were found on Oglala National Grassland in 1988, 1994, 1996, 2003 and 2004. The 2003 nest was about five miles from a prairie dog colony. The 2004 nest was approximately 10 miles from a prairie dog colony.

On the west half of Buffalo Gap National Grassland, one nest was observed in 2002, 2003, and 2004; none were within one mile of a prairie dog colony. In the past, up to five nests have been found in a single year there, even when acres covered by prairie dog colonies were less than they are today.

These hawks are currently sighted on the east half Buffalo Gap National Grassland on a frequent basis, although nests have not been documented recently. Five nests were recorded in 1991, four of which were in Conata Basin. All of those nests were within a half-mile of prairie dog colonies.

Ferruginous hawks are fairly common on Fort Pierre National Grassland, and are often seen on prairie dog colonies. Adult hawks were spotted at two tree nests in spring 2004. One nest was 1.75 mile from a prairie dog colony. The other was over three miles from a colony. All nests that have been observed on this grassland in the past have been in trees. They have been scattered across the area in drainages where cottonwoods grow, not in the northeast grassland near the large complex of prairie dog colonies.

Direct, Indirect, and Cumulative Effects. Ferruginous hawks do not eat grain, so there should be no risk of primary poisoning. Secondary effects from consuming recently poisoned prairie dogs are unlikely, since carcasses are routinely eviscerated. Eagles and owls that were routinely fed zinc phosphide-killed rodents or rabbits showed no ill effects (Tietjen 1976). Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Considering indirect effects, the area over which ferruginous hawks can effectively hunt for food may be diminished as prairie dog colonies are treated with rodenticide and the sites grow taller grass. Ferruginous hawks feed on prairie dogs, cotton-tailed rabbits, and ground squirrels, all of which are often more common on prairie dog colonies than off. However, the preferred alternative does not call for eradication of all prairie dog colonies in an area. Ferruginous hawks

are a soaring raptor, and they are mobile in searching for food. The hawks may be able to adjust their hunting patterns to forage on remaining prairie dog colonies.

Rodenticide use and reduced prairie dog populations will result in fewer options for productive ferruginous hawk hunting areas. However, prairie dog colonies are not the sole--or even the major--source of food in some parts of South Dakota. The north-central part of the state east of the Missouri River has many confirmed ferruginous hawk nests (Peterson 1995) but is not a major prairie dog area.

Ferruginous hawks could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a ferruginous hawk for a prairie dog, even at long distances. It is always possible for an unethical prairie dog shooter to kill a ferruginous hawk. The fact that they are a protected species and it is against the law to kill or harass them should be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Shooting will obviously reduce the number of prairie dogs on a colony, but enough rodents and rabbits should remain as a food source for these raptors. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area. Hawks can also learn that gunfire means easy prey availability, and the birds may be attracted to it (Bechard and Schmutz 1995). Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Harmful cumulative effects include plowing private rangelands and prairie to produce grain. Rodenticide application on private lands also adds to the effects. Fragmentation of the mixed-grass prairie by cropland and tree plantings would favor other raptor species that might compete with ferruginous hawks for food or space. Intentional shooting of hawks by individuals who think they are reducing predation on game birds or mammals also occurs.

DETERMINATION OF EFFECT AND RATIONALE FOR THE FERRUGINOUS HAWK

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for ferruginous hawks under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction habitat until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Ferruginous hawks do not eat grain, so there should be no risk of primary poisoning. Secondary effects from consuming recently poisoned prairie dogs are unlikely, since carcasses are routinely eviscerated. The reduction in acreage of prairie dog colonies could be detrimental to ferruginous hawks in the area because of the decreased prey base, but this can not be quantified. The alternative does not call for eradication of all prairie dog colonies in an area. Ferruginous hawks

are a soaring raptor, and they are mobile in searching for food. The hawks may be able to adjust their hunting patterns to forage on remaining prairie dog colonies.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a ferruginous hawk, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. These actions will not have any measurable effect on overall ferruginous hawk populations. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

CHESTNUT-COLLARED LONGSPUR *Calcarius ornatus*

Distribution and Status. Chestnut-collared longspurs breed from southern Alberta to southern Manitoba, south to west central Colorado, and east through North Dakota and South Dakota to western Minnesota (Dechant et. al. 2003c). They winter from northern Arizona, central & northern New Mexico, eastern Colorado, and central Kansas south into Mexico (DeGraff et al. 1991).

The chestnut-collared longspur is listed as "secure" both globally and nationally. There is some indication of reduction of historic breeding and winter ranges and long-term population declines. Elimination of prairie habitat by cultivation and conversion to urban development is listed as the primary threat. Long term population declines are likely to continue as native rangeland is converted to cropland (Nature Serve 2003). All of the units in the project area are within their breeding range with the exception of the Sandhills units (Bessey Ranger District, Samuel R. McKelvie National Forest) (Dechant et. al. 2003c). The USFS Region 2 state with the highest average relative abundance of chestnut-collared longspurs is South Dakota, with 21.98 individuals (Sedgwick 2004a).

Habitat. Chestnut-collared longspurs use level to rolling mixed grass and shortgrass uplands, and, in drier habitats, moist lowlands. They prefer open prairie and avoid excessively shrubby areas. Grasslands with dense litter accumulations are avoided (Dechant et. al. 2003c).

In their literature review Dechant et al. (2003c) makes no mention of chestnut-collared longspurs using prairie dog colonies. They prefer native pastures with fairly short vegetation and sparse litter accumulation. This type of habitat certainly exists within some prairie dog colonies, especially in areas that have recently been colonized. In dry, sparse shortgrass prairie, light to moderate grazing is more appropriate, and heavy grazing or overgrazing may be detrimental to chestnut-collared longspurs (Dechant et. al. 2003c). In the interior areas of prairie dog colonies, especially during a drought, the levels of cover in prairie dog colonies are comparable to heavy grazing or overgrazing and are probably avoided by chestnut-collared longspurs.

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G5, N5B, N5N; Nebraska – S2; South Dakota – S4B; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. A conservation assessment for the chestnut-collared longspur was prepared for the Forest Service, October 7, 2004 by Sedgwick, J.A. (2004a)

Existing Conditions. Maps E-34 through E-35 displays the recorded locations of chestnut-collared longspurs on the various units in the project area. They have only been documented on the west half of the Buffalo Gap National Grassland, Oglala National Grassland, and Ft. Pierre National Grassland.

All of the grassland areas with level to rolling hills of the Buffalo Gap National Grassland, Fort Pierre National Grassland, & Oglala National Grassland are potential chestnut-collared longspur habitat. The chestnut-collared longspur, in most cases, will be found on the moderately to heavily grazed sites. Only one of the sightings was within a prairie dog colony.

Direct, Indirect, and Cumulative Effects. The chestnut-collared longspur feeds primarily on grass seed and some insects, which are gleaned from the ground. If they are in the area during the rodenticide application, they would be susceptible to being poisoned by the zinc phosphide treated grain.

The majority of these birds migrate in September. The latest date a chestnut-collared longspur was seen in South Dakota is Oct 13 (SDOU 1991). The earliest rodenticides can be applied to the NNF is Oct 1 (U. S. Forest Service 2001c). So, the majority of the birds have migrated before rodenticides can be used.

Chestnut-collared longspurs could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a chestnut-collared longspur for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a longspur. The fact that chestnut-collared longspurs and all song birds are a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

The chestnut-collared longspur is not dependent on prairie dog colonies for its existence. Breeding habitat for chestnut-collared longspur is low to moderate structure mid grass prairie. This habitat can be found on or off prairie dog colonies depending on many factors, like precipitation, site potential, and length of time prairie dogs have inhabited the area. In the project area, the overriding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines within the LRMP establish levels at which grassland structure will be managed by geographic area.

DETERMINATION OF EFFECT AND RATIONALE FOR THE CHESTNUT-COLLARED LONGSPUR

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for chestnut-collared longspurs under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Under this alternative, there would be increased rodenticide use and the chance of individual chestnut-collared longspurs ingesting rodenticide bait is increased. Timing restrictions on the application of rodenticide make large-scale poisoning of longspurs improbable, because most of the birds will have left the area before rodenticides are used. So, it is unlikely that the rodenticide use outlined in the preferred alternative will have a large effect on chestnut-collared longspur populations that use the area seasonally.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a chestnut-collared longspur, but the effects will still be discountable (see the above discussion). Shooting within the half mile zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colony in this analysis. These actions will not have any measurable effect on overall chestnut-collared longspur populations.

There is a possibility that in a drought the vegetation on the prairie dog colonies could reach a threshold in which chestnut-collared longspurs would avoid the area. Even if all of the prairie dog colonies were uninhabitable by chestnut-collared longspurs, there could still be more than 750,000 acres of national grassland that is within their breeding range that could be managed for enhanced habitat suitability for longspurs. The LRMP sets objectives for grassland structure and the assumption is these objectives will be meet and there will be adequate habitat for chestnut-collared longspurs.

MCCOWN'S LONGSPUR *Calcarius mccownii*

Distribution and Status. McCown's longspurs breed from southern Alberta and southern Saskatchewan, south through Montana, eastern and central Wyoming, and north central Colorado, and east to western Nebraska, north central South Dakota and southwestern North Dakota (Dechant et. al. 2003d). In Region 2 of the Forest Service, they commonly breed only on the Pawnee National Grassland in Colorado and the Thunder Basin National Grassland in Wyoming (Sedgwick 2004b).

Most populations appear to be stable or increasing, but due to a historical long-term decline in abundance on both their breeding and wintering grounds, this species is ranked by various state, federal, and private conservation organizations as a grassland "species of concern", "high priority", "imperiled", with "pressing needs", "state imperiled", or a species of "conservation concern" (Sedgwick 2004b). In South Dakota, they're listed as a rare migrant through the western tier of counties (SDOU 1991). In Nebraska, breeding has been documented in southern Sioux County (Johnsgard 1979).

Habitat. McCown's longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). They breed in shortgrass prairie; especially where vegetation coverage is sparse due to low soil moisture or heavy grazing, or where it is interspersed with shrubs or taller grasses Blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) are dominant plants in nesting (Sedgwick 2004b).

There has been no research on whether or not McCown's longspurs specifically prefer the habitat created by prairie dogs (Sedgwick 2004b). Certainly, areas used by prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur within the study area.

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G4, N4B, N4N; Nebraska – S3; South Dakota – SUB; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. A conservation assessment for the McCown's longspur was prepared for the Forest Service, October 13, 2004 by Sedgwick, J.A.

Existing Conditions. Suitable habitat for the McCown's longspurs within the project area is the long-term low structure grasslands. All grassland areas on Oglala National Grassland are potential McCown's longspur habitat, depending on management. Prairie dog colonies may be the best long-term habitat within the area.

There have not been any documented McCown's longspur sightings on Oglala National Grassland in recent years. The last McCown's longspur sited on the Oglala National Grassland was in 1994. The Oglala National Grassland is very close to both breeding and wintering population of McCown's longspurs (Dechant et. al. 2003d) (Sedgwick 2004b). .

Direct, Indirect, and Cumulative Effects. Oglala National Grassland is the only area that would be affected by rodenticide use and reduced prairie dog populations near McCown's longspur habitat.

The diet of McCown's longspurs consists primarily of grass and forb seeds and insects, including grasshoppers, moths, beetles, and ants. McCown's are primarily granivorous during winter (Sedgwick 2004b). If they are in the area during rodenticide applications, they would be susceptible to primary poisoning if they ingest rodenticide bait. McCown's longspurs fall departure dates from the breeding grounds are variable, extending from August to late September (Saskatchewan, Montana). A few individuals may linger until early to mid-October (Saskatchewan, Colorado). Early arrival dates on the wintering grounds occur from late September (New Mexico), to early October (Arizona), to late October (Texas). They arrive in Mexico by November (Sedgwick 2004b). Although rare, migrating birds could be in the area while rodenticide application is taking place.

McCown's Longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). Blue

grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) are dominant plants in nesting (Sedgwick 2004b). The McCown's longspur is not dependent on prairie dog colonies for its existence, but prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur within the Oglala National Grassland. The over riding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines within the LRMP establish the desired levels of grassland structure.

McCown's longspurs could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a McCown's longspurs for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a longspur. The fact that the McCown's longspurs and other song birds are protected and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Also, on the Oglala National Grassland, shooting regulations are not changed by this decision from LRMP direction.

DETERMINATION OF EFFECT AND RATIONALE FOR THE MCCOWN'S LONGSPUR

Oglala N.G. The biological determination for McCown's Longspurs under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: With this alternative, it is predicted that there could be between 1,400 and 1,800 acres of prairie dog colonies on the Oglala National Grassland by 2012, and it is anticipated that rodenticides will be applied to 410 to 510 acres each year.

Some limited and regulated shooting continues and would reduce prairie dog densities outside ferret reintroduction habitat, and the Forest Service defers to state guidance on any future actions to regulate prairie dog shooting in these areas.

There is always a chance of a McCown's longspur eating rodenticide bait. The probability of this happening is lessened by the fact that there are very few McCown's longspurs in the area. So, it is unlikely that rodenticide use as outlined in the preferred alternative will have any lasting affects on the McCown's longspur population in the area.

McCown's Longspurs use grasslands with little litter and low vegetation cover, such as that provided by shortgrass or heavily grazed mixed-grass prairie (Dechant et. al. 2003d). The McCown's longspur is not dependent on prairie dog colonies for its existence, but prairie dogs would create habitat characteristics that would be favorable to the McCown's longspur. Under this alternative, it is predicted that there could be between 1,400 and 1,800 acres of prairie dog colonies on the Oglala National Grassland by 2012.

SHORT-EARED OWL *Asio flammeus*

Distribution and Status. In North America, short-eared owls breed from Alaska and continental Canada, also including the southern Baffin Islands, south to central California, and east through Kansas, eastern Oklahoma, eastern Ohio, Pennsylvania, Maryland, and Prince Edward Island (Dechant et. al. 2003e).

This medium-sized owl of open country is a sensitive species in Region 2 and is a rare resident of Fort Pierre National Grassland (Peterson et al. 1991), Buffalo Gap National Grassland (Graupman et al. 1991), and Oglala National Grassland (Peterson 1993). It is a rare summer resident of the Nebraska Sandhills (Peterson et al. 1993). Partners in Flight list it as a species of continental concern in the prairie biome (Rich et al. 2004).

Habitat. The short-eared owl ranges over mid and tall grasses and marshes, often hunting during daylight (Sibley 2001). Small rodents, especially voles *(Microtis spp.),* compose a preponderance of its diet, and there have been strong shifts between years in the density and location of breeding owls, depending on fluctuating food resources (Wiggins 2004). The abundance of prairie voles in central South Dakota was positively correlated with vegetation variables that measured the height and density of the vegetation and litter, although vole abundance seemed to be correlated with litter rather than the seral stage of prairie vegetation (Fritcher 1998). Short-eared owls build their nests on the ground in open country (Clark 1975), and nests found in the Dakotas have been in cover about 12 to 24 inches high and were well concealed from the sides (Duebbert and Lokemoen 1977). Clutch size is highly variable both within and between localities (Wiggins 2004), but it is known that clutch size is higher in years of food abundance (Clark 1975, Holt and Leasure 1993). Short-eared owls use prairie dog colonies in the spring, summer, and fall months (Sharps and Uresk 1990). The current and historical threats to viable short-eared owl populations in Region 2 can be ranked as follows: 1. Loss of native grassland and wetland habitats. 2. Degradation of existing grasslands due to overgrazing by livestock. 3. Degradation of grassland habitat due to fragmentation. (Wiggins 2004).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G5, N5B, N5N; Nebraska – S2; South Dakota – S3B, S3N; Forest Service-Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. A conservation assessment for the short-eared owl was prepared for the Forest Service, September 22, 2004 by Wiggins, D. (2004)

Existing Conditions. Maps E-36 through E-38 displays the recorded locations of short-eared owls on the various units in the project area. Short-eared owl habitat exists across the project area where adequate grass for nest sites and habitat for voles is present. Healthy prairie dog colonies have low grass structure with little or no high/dense vegetation cover to provide potential nest sites for medium-sized birds that nest on the ground, such as short-eared owls. The vegetation litter that supports populations of voles is not present, either, so there is no habitat for the owl's preferred prey. On the other hand, prairie dog colonies may provide diverse short-grass sites on which these owls may forage, although this is not an essential habitat element for them. In this respect, prairie dog colonies may be beneficial if adequate short-eared owl nesting cover and habitat for voles is available elsewhere.

Direct, Indirect, and Cumulative Effects. Short-eared owls do not eat grain, so primary poisoning resulting from ingestion of rodenticide bait is not an issue. There should be no secondary poisoning from consumption of gut contents of dead prairie dogs if specifications on the rodenticide label are adhered to and the few prairie dog carcasses that are found above ground are buried. This threat is lessened because most prairie dogs poisoned with zinc phosphide bait die inside their burrows (Tietjen 1976). Eagles and owls that were routinely fed zinc phosphide-killed rodents or rabbits showed no ill effects (Tietjen 1976). Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Because of abundant prey, it would be expected that short-eared owls would frequent prairie dog colonies for hunting, but they are not dependent on prairie dogs or prairie dog colonies for their survival in the area. In fact, voles are the owl's preferred prey, and would not be present on prairie dog colonies because vegetation litter that supports populations of voles is not present.

Where prairie dog colonies sit on low productivity range sites that are heavily grazed, removing the rodents will not provide habitat for short-eared owls. However, if high and dense grass cover develops after prairie dogs have been eliminated, short-eared owls could be indirectly benefited.

Short-eared owls could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a short-eared owl for a prairie dog, even at long distance. It is always possible for an unethical prairie dog shooter to kill an owl. The fact that the short-eared owl is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area. Shooting will obviously reduce the number of prairie dogs on a colony, but enough of the rodents should survive to maintain a foraging area for these raptors. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Cumulative effects that would be harmful to these owls include destruction of private rangelands and prairies through plowing, heavy grazing that leaves little residual cover, and land development for purposes other than habitat preservation or grazing.

DETERMINATION OF EFFECT AND RATIONALE FOR THE SHORT-EARED OWL

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for short-eared owls under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: With the implementation of this alternative it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to between 7,330 and 9,420 acres of prairie dog colonies each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Considering that short-eared owls do not eat grain and the threat of secondary poisoning is small, there is no direct effect from rodenticide use. Rodenticide use would reduce acres of prairie dog colonies. This could increase high/dense cover for short-eared nesting and litter for vole habitat, the owl's preferred prey.

The preferred alternative would increase the chance of a prairie dog shooter coming into contact with a short-eared owl, but the effects would be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colonies in this analysis. These actions will not have any measurable effect on overall short-eared owl populations. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

BURROWING OWL *Athene cunicularia*

The following discussion often relies upon a thorough and recent species assessment completed by McDonald et al. (2004), and the references cited therein as well as additional references cited in this discussion.

Distribution and Status. The burrowing owl has a wide distribution in Canada, Mexico, and the western U.S. In the Great Plains, the species is found on all national grasslands and forests, although extirpated from the Sheyenne National Grassland in eastern North Dakota.

The historical range of the western burrowing owl once included the southern interior of British Columbia, east into Manitoba, south including Minnesota, Iowa and south-central Texas, but it is now extirpated from these areas (Figure 1). The historical range in Mexico is not known, though museums specimens in Mexico suggest that burrowing owls were once found in 28 of 32 states.

Most jurisdictions in Canada and the U.S. have shown overall declines in populations since the 1980s. No historical numbers of burrowing owls prior to the decline detected in the mid 1980s exist. The historical breeding distribution of burrowing owl was likely more extensive in the late 1800s when North America was covered by over 100 million acres of prairie dog colony habitat. This specific type of breeding habitat has been reduced to only 1.9 million acres, a substantial loss of breeding habitat.

Burrowing owls are currently undergoing a decline in range and abundance. The current breeding range of the western burrowing owl stretches from southern Alberta and Saskatchewan in Canada, south to central Mexico. The range has contracted in the east and north. Burrowing owls are currently undergoing a range wide decline in abundance.

A comprehensive, continental survey has not been conducted. A population estimate of the entire sub-species can only be derived from regional estimates. A survey of biologists in North America estimated that in 1992 there were 20,000-200,000 burrowing owls in the U.S., 2,000-20,000 in Canada, and an unknown number in Mexico. The broad estimates indicate a low confidence in their figures.

The number of breeding pairs of burrowing owls in Canada declined in the 1990's at a rate of over 20 percent per year. Saskatchewan's Operation Burrowing Owl program indicates a 95 percent decline from 1988 to 2000. A summary of findings in preferred states in the U.S. indicate:

- 12-27 percent decrease in the number of breeding pairs in California in 1986-91
- 58 percent decline in western Nebraska from 1990-1996
- 89 percent vacancy of historical sites in 1998 in Wyoming
- No owls in the eastern third of North Dakota
- Uncommon to rare in the best habitats in North Dakota north and east of the Missouri River
- Widespread but uncommon in Arizona
- Mixed trends in New Mexico depending on the status of suitable habitat
- Restricted primarily to the panhandle in Oklahoma

There is virtually no published information on population estimates or trends of resident or migrant burrowing owls in Mexico. Most studies in Mexico are anecdotal, mainly distributional records, with only a few referring to its ecology.

The Forest Service considers the burrowing owl to be a sensitive species throughout the Great Plains. The U.S. Fish and Wildlife Service lists the burrowing owl as a National Bird of Conservation Concern and designates high-priority conservation status to the species in five Bird Conservation Regions relevant to USFS Region 2 (BCR 9, 11, 16, 17, and 18). The Colorado Division of Wildlife lists the burrowing owl as threatened, and the state wildlife agencies within Wyoming, South Dakota, Nebraska, and Kansas list the burrowing owl as a Species of Concern. The species is listed as endangered in Canada and threatened in Mexico.

The status of burrowing owls in the Great Plains of Region 2 is closely tied to that of prairie dogs because of the owls' requirement for mammal-excavated burrows. Continued loss of prairie dog colonies through active eradication, habitat loss, or disease will negatively impact burrowing owl population viability. Most of the states in Region 2 have tentative evidence for recent and ongoing declines, especially in the eastern portions of the Great Plains. Recent genetic studies, however, suggest that burrowing owls are panmictic (genetically connected by extensive dispersal) and do not yet show evidence of genetic isolation among populations. Strong dispersal ability means that reversal of unfavorable conditions should result in re-establishment of burrowing owls in suitable habitat via dispersal. Little is known about threats on the wintering grounds outside Region 2. Matrix-based demographic analyses suggest that the survival rate of adult females is a key element in the population dynamics of burrowing owls.

The ultimate causes of burrowing owl population declines remain unclear. For example, in Canada the documented proximate causes related to the decline are reduced productivity, high rates of pre-migratory mortality, permanent emigration, and low recruitment rates. Possible limiting factors across western North America include a reduction in prey availability and loss of habitat. Current productivity rates may be depressed by an overall low availability of prey due to control of insects and small mammals. Significant increases in productivity rates were achieved with supplemental feeding and noted during the availability of high prey densities. The loss of ephemeral wetlands used by small mammal prey and the cultivation of prey habitat alongside roadway and railways have also degraded burrowing owl habitat. The disappearance of prairie dogs across much of western North America dramatically decreased the availability of suitable nesting and roosting burrows. Additional threats to burrowing owls may include increased

predation due to habitat fragmentation/degradation and an increase in avian predator perches (utility poles, etc) and nesting trees, illegal shooting, pesticides and other contaminants, and vehicle collisions.

Habitat. Burrowing owl habitat typically consists of open, dry, treeless areas on plains, prairies, and deserts. These areas are also occupied by burrowing mammals and other animals that provide nest burrows. The prairie dog is a keystone species in the Great Plains and its burrows were undoubtedly the principal breeding habitat of the burrowing owl. Indeed, the burrowing owl is often viewed as one of the unique species of a prairie dog colony. Although burrowing owls are capable of using badger and coyote burrows, and still use the burrows of Richardson's ground squirrel (*Spermophilus richardsonii*) in the far northern Great Plains, in grasslands without prairie dogs burrowing owls occur at very low densities.

Because burrowing owls spend most of their time on or in the ground and are extremely susceptible to predation, short vegetation structure is also a requirement to allow for better detection of predators and visibility of prey. Given this requirement for short vegetation, burrowing owls are commonly found in association with cattle, prairie dogs, and other grazers that clip vegetation.

Burrowing owls nest in clusters within prairie dog colonies. In small colonies, burrowing owls either nest closer together or there are a lower number of owls within a cluster. The number of burrowing owls within a cluster positively influences reproductive success. For example, burrowing owls may alert each other to predators. In small colonies where owls nest at high densities, nests may be successful but they fledge fewer young perhaps due to competition with neighboring owls. In prairie dog colonies, burrowing owl reproductive success has been most strongly correlated with active prairie dog burrow densities and the number of nesting pairs. At the prairie dog colony scale, colonies that have enough desirable habitats to allow for greater mean spacing of nests allow early arriving nesting pairs to select these colonies and to achieve greater reproductive success. The key element is colony size. Larger prairie dog colonies fledge more young than small colonies. Lower burrowing owl pair densities which are found in larger colonies have greater mean egg clutch sizes.

The total extent of burrowing owl habitat loss in western North America is not known. The open grasslands of the Great Plains eco-region occur from southern Canada south to central Mexico encompassing 19 percent of the total land cover of North America. Of the several million square miles of the central grasslands of North America, 28 percent is in Canada, 58 percent is in the U.S. and another 14 percent is found in Mexico. However, less than 25 percent of the original grasslands remain as native vegetation in Canada and the U.S., and in some states and provinces as little as 1 percent remains. Grassland patches in Mexico were originally widely distributed throughout several ecosystem types, but most grassland has since disappeared through human activities. Regions of suitable grasslands and desert habitat occur west of the continental divide, although the relatively high density of human activity especially in western coast states exerts tremendous pressure towards conversion of suitable habit to agriculture or urban development. Since burrowing owls require the open habitats that are also preferred for agriculture and development, continued conversion of land will likely lead to further declines of owls in those areas.

Burrowing owls hunt by ground forging, hovering, from a perch or by flycatching. Burrowing owls eat primarily small mammals and insects. Land use management of native habitat,

particularly grazing intensity, may affect the abundance of prey. In addition, grasshopper control has greatly reduced the intensity and frequency of grasshopper outbreaks in the past century, a potentially significant source of prey for burrowing owls.

Pesticides can be either lethal to burrowing owls or sub-lethal leading to reduced fitness of the owls. Indirect pesticide effects include reduced potential prey availability, secondary poisoning through scavenging dead rodents and other prey items, and reduction in productivity due to anticholinesterase insecticides. Granular carbofuran is restricted in the U.S. and Canada and its liquid formulations are banned in Canada but still used in the U.S. in corn and alfalfa fields. Although DDT was banned in the U.S. in 1972, burrowing owl eggshell thinning associated with DDT metabolites in eggs and feathers is occasionally problematic in California. An evaluation of pesticide use on the wintering grounds has not been conducted.

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G4, N4B, N4N; Nebraska – S3; South Dakota – S3S4B; Forest Service - Sensitive Species

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. Nebraska and South Dakota are included in the Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States (Klute et al. 2003). Several other conservation and assessment efforts have been published (Holroyd, G.L. et al. 2001, Johnson and Anderson, 2002). Canada, Mexico, and the United States have drafted a North American Conservation Action Plan for the burrowing owl to be published in 2005 (Commission for Environmental Cooperation 2005).

Existing Conditions. Maps E-39 through E-42 displays the recorded locations of burrowing owls on the NNF. Throughout the years burrowing owls have been seen on almost all of the established prairie dog colonies at one time or another. Buffalo Gap National Grassland, Conata Basin in particular, contains one of the largest concentrations or complexes of prairie dog colonies in South Dakota, indeed anywhere in the range of the prairie dog. Fort Pierre National Grassland and Oglala National Grassland contain relatively small areas of prairie dog colonies when compared to Buffalo Gap National Grassland and tribal lands. Buffalo Gap National Grassland and tribal lands in South Dakota contain the largest prairie dog complexes of significance to the burrowing owl throughout the burrowing owl's breeding range. To the north and west of South Dakota burrowing owl occurrence on prairie dog colonies declines dramatically for unknown reasons. Therefore, the large prairie dog colony complexes in South Dakota are unique for burrowing owls. No such areas exist on private lands or public lands in the Great Plains that could sustain large populations of burrowing owls.

Large complexes of prairie dogs have existed in South Dakota for several decades. Many colonies are of some antiquity (White 1986). They are colonies of "historic" importance to burrowing owls – likely used every year by burrowing owls. Burrowing owls often reuse the same territories (and even burrows) as the previous year. This is an indication of site fidelity and the importance of specific site characteristics or a combination of both.

Direct, Indirect and Cumulative Effects. The burrowing owl feeds primarily on insects, including macro-arthropods, and small mammals but also take some birds, fishes, and frogs. Although the burrowing owl does not normally feed on prairie dogs, it has been noted to die from secondary poisoning following prairie dog rodenticide programs (Tyler 1968). Burrowing owls do not eat rodenticide bait (oats) although they could eat deer mice and northern grasshopper mice (*Onochomys leucogaster*) that have been poisoned by rodenticide. Deer mice and northern grasshopper mice populations are higher on prairie dog colonies than on uncolonized areas (Agnew et al. 1986). Changes in deer mice densities and populations of deer mice have been reported following rodenticide application (Wood 1965, Uresk et al. 1988, Deisch et al. 1990). Arthropod populations are higher on prairie dog colonies than on adjacent uncolonized prairie (Agnew et al. 1988). Rodenticide use can reduce the arthropod populations upon which burrowing owls depend.

Burrowing owls migrate in late September. The latest dates of migration in South Dakota were listed as 13th of October and the 26th of October. Consumption of poisoned mice during migration on attractive habitat such as the large colony complexes on Buffalo Gap National Grassland may take an unknown number of burrowing owls. Incidental contact with crews applying rodenticide may disturb the birds temporarily, but they should not be displaced for long from foraging areas on prairie dog colonies.

Substantial rodenticide use has already occurred in South Dakota. Rodenticides have already been applied to approximately 6,780 acres of colonies on Buffalo Gap National Grassland in 2004. Nearly 17,000 acres of prairie dog colonies have been treated with rodenticide on nearby private land by the State of South Dakota. The Tribes have purchased enough rodenticide to poison 16,000 acres of prairie dog colonies on the Pine Ridge and Rosebud Indian Reservations. So, extensive use of rodenticides (39,000) has or soon will likely take place on 10 percent of the 412,000 acres of prairie dog colonies estimated to occur in South Dakota. It is likely that there will be additional and substantial requests for more rodenticide use on tribal and private lands. Cumulatively, past and planned prairie dog rodenticide use represents a substantial loss of burrowing owl habitat.

Shooting as a byproduct of recreational prairie dog shooting is a potential source of anthropogenic mortality. Shooting reduced the adult population of prairie dogs by 69 percent in a Montana colony (Knowles 1987). In one Oklahoma population, shooting accounted for 66 percent of total burrowing owl adult mortality, and in a Canadian study, three burrowing owl populations were greatly reduced by prairie dog shooting. Recreational shooting in prairie dog colonies also has a potentially more widespread though subtle and indirect effect on burrowing owl survival and productivity. Nest success rates and number of young fledged by owls in prairie dog colonies subject to recreational shooting are significantly lower than in colonies where shooting of prairie dogs did not occur. Shooting restrictions and LRMP management decisions on behalf of ferrets appear to have a beneficial effect on burrowing owls. Unrestricted shooting reduces active burrow densities and results in burrowing owl mortality. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Rates of badger predation on burrowing owls are inversely related to measures of prairie dog density. Rates are likely due to the dilution effect, that is, prairie dogs are “preferred” prey by badgers but once prairie dogs are removed (or reduced) from the system, burrowing owls

become alternative prey. The burrowing owls are more obvious once the prairie dogs are removed (or reduced) which may also increase vulnerability to predation. Increased rates of badger predation have the greatest impact on the survival of juveniles and adult females (sole incubator of eggs and young.

Burrowing owl populations exhibit significant declines concurrent with reductions in active prairie dog burrow densities. There is, however, a time lag in burrowing owl response to changes in prairie dog densities, possibly because they return to the same sites in subsequent years and when the habitat quality changes as a result of rodenticide application there is increased susceptibility of the nest and incubating female to predation. As a result, over time, the population will decline. This may also be related to the fact that burrowing owls have a higher return rate at sites where they bred successfully the previous year. As reproductive success declines in prairie dog colonies in which rodenticides have been applied there may be a combination of higher mortality and lower site fidelity amongst burrowing owls. The end result may be that the burrowing owl population declines and may eventually be extirpated from the area.

DETERMINATION OF EFFECT AND RATIONALE FOR THE BURROWING OWL

Fort Pierre N.G. The biological determination for burrowing owl under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: This alternative results in intermediate prairie dog colony acreages and levels of rodenticide use. Fort Pierre National Grassland currently has 1,340 acres of prairie dogs on the unit. The expanded use of rodenticide along Forest Service boundaries could eliminate approximately 470 acres of prairie dog habitat within the 0.25-mile zone with 870 acres remaining. The predicted range of prairie dog acres across the grassland is estimated to be between 1,100 and 1,400 acres by 2012.

Under the preferred alternative, Fort Pierre National Grassland prairie dog colony acreage would change from the current 1,270 acres (potential habitat for 87 burrowing owl nests) to 1,100 and 1,400 acres (potential habitat for 70 to 90 burrowing owl nests) by 2012, although in the immediate future colony acreage would fall to 870 acres. Burrowing owl habitat would remain stable or increase over current levels retaining the current population of burrowing owls.

Buffalo Gap N.G: The biological determination for the burrowing owl under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: Buffalo Gap National Grassland harbors about 26,030 acres of prairie dog colonies. Under the preferred alternative, the expanded use of rodenticide along Forest Service boundaries

will reduce the total acreage to about 22,360. In addition, some limited and regulated prairie dog shooting will also be allowed within the one-mile zone. The range of prairie dog acreage across the grassland is predicted to be 27,000 and 38,000 acres by 2012.

Some limited and regulated shooting in the Conata Basin ferret habitat can be considered and authorized in the 0.5 mile zone along private and tribal boundaries, if minimum ferret population thresholds continue to be met and incidental take of ferrets is not likely to be exceeded. The shooting closure prescribed in the LRMP for ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, shooting restrictions or closures will not be considered by the Forest Service in the Smithwick until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Under the preferred alternative, Buffalo Gap National Grassland prairie dog colony acreage would change from 26,030 acres (potential habitat for 1,666 burrowing owl nests) to 27,000 and 38,000 acres (potential habitat for 1,728 to 2,432 burrowing owl nests). The colony acreage treated with rodenticide on Buffalo Gap National Grassland would turn into sink habitat for burrowing owls, with populations in those areas not being sustainable. Burrowing owl populations on prairie dog colonies that are subject to repeated rodenticide applications would be at a high risk. Due to its size, distribution of colonies, and documented nesting efforts and high reproductive success, Buffalo Gap National Grassland is important for nesting burrowing owls. There would be increased vulnerability to predation (reduced survival of adult females and juveniles) and reduced reproduction in rodenticide areas, loss of sites that have a "historic" importance to burrowing owls, a reduction in colony size and reduced cluster dynamics (fewer pairs or nesting in higher densities – both which have been documented to negatively effect reproduction) and effects of complex fragmentation on the distribution of suitable nesting and foraging sites.

This alternative could authorize shooting within the 0.5 mile buffer zone in Conata Basin and delays the shooting closure in the Smithwick area. This does increase the chance of a burrowing owl coming into contact with prairie dog shooters. Shooting within the 0.5 mile zone in Conata Basin will be used to augment rodenticide use. Shooting does not change the acreages of prairie dog colony in this analysis. Prairie dog shooting can leave lead fragments in prairie dog carcasses posing a potential risk to scavengers (Jonathan Pauli pers. communication).

Prairie dog shooting is a source of owl mortality in certain areas. Shooting has accounted for 66 percent of total adult burrowing owl mortality in some prairie dog colonies and some populations have been decimated by shooting. Recreational shooting in prairie dog colonies also has a potentially more widespread though subtle and indirect effect on burrowing owl survival and productivity. Nest success rates and number of young fledged by owls in prairie dog colonies subject to recreational shooting can be significantly lower than in colonies where shooting of prairie dogs did not occur.

Oglala N.G. The biological determination for the burrowing owl under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: Oglala National Grassland currently harbors 2,220 acres of prairie dog colonies. The expanded use of rodenticide along Forest Service boundaries will reduce colony acres to 1,170.

The predicted range of prairie dog colonies is 1,400 to 1,800 acres, potential habitat for 90 to115 burrowing owl nests by 2012.

Because of the decrease in prairie dogs, burrowing owl habitat would also be reduced, although the remaining colony acres would likely maintain as viable a population of burrowing owls as has existed on Oglala National Grassland in the past.

MOUNTAIN PLOVER *Charadrius montanus*

Distribution and Status. Mountain plovers breed from southeastern Alberta and southwestern Saskatchewan through central Montana, south to south central Wyoming, east central Colorado and northeastern New Mexico, and east to northern Texas and western Kansas (Dechant et. al. 2003f).

In 1999, the mountain plover was proposed for listing as a threatened species under the Endangered Species Act by the U.S. Fish and Wildlife Service. Higher priority listings precluded further action, until several groups submitted a 60-day Notice of Intent to sue the Secretary of the Department of the Interior for failure to comply with legal deadlines established under the Act for completing listing actions. In response, USFWS re-examined the case. On September 9, 2003, the agency published a notice in the Federal Register (60 FR 53083) withdrawing its proposed rule to list the mountain plover as a threatened species. Following further review and examination of new data, USFWS determined that the mountain plover was not warranted for federal listing because threats to the species were "not as significant as earlier believed" (Dinsmore 2003).

The mountain plover is listed as "imperiled" both globally and nationally. Reasons for the determination are fewer than 100 occurrences, limited suitable nesting habitat and wintering habitat being converted into agricultural land, and the rapid decline of the last few decades is continuing (Nature Serve 2003). In South Dakota they are listed as a former rare breeder in the west (SDOU 1991). There are old records of mountain plovers in Fall River County (SDOU 1991) and a pair was observed in 1977 in Bennett County, one mile north of Tuthill (South Dakota Bird Notes 1977). In Nebraska there are records of mountain plovers inhabiting Dawes and Sioux counties before 1920 but there are no recent sightings in this area (Ducey 1988).

Habitat. Mountain plovers are a disturbed-prairie or semi desert species, rather than a grassland species. They prefer disturbed habitats for nesting, including areas formerly occupied by bison and prairie dogs and agricultural fields (Dinsmore 2003). Mountain plovers prefer large, flat grassland expanses with sparse, short vegetation, and bare ground. Areas disturbed by prairie dogs, heavy grazing, or fire can provide suitable habitat. Mountain plovers were found to selectively inhabit black-tail prairie dog colonies in north-central Montana (Knowles et al. 1982). The species often nests near cow pies, rocks, or clumps of vegetation. In mixedgrass prairie and other areas where vegetation is too tall, thick, or shrubby, prairie dog colonies provide a mixture of short grass and bare ground that is suitable for mountain plovers. (Dechant et. al. 2003f).

Departure from the breeding grounds varies latitudinally, with southbound plovers exiting north-central Montana by late September, Wyoming and northeastern Colorado by mid-October, and southeastern Colorado by late October (Dinsmore 2003).

The mountain plover is insectivorous, although its specific food habits have been studied very little. They feed on ground-dwelling invertebrates, primarily beetles (Coleoptera), grasshoppers and crickets (Orthoptera), and ants (Hymenoptera) (Dinsmore 2003).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G2, N2B, N2N; Nebraska – S1B; South Dakota – SX; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. A conservation assessment for the mountain plover was prepared for the Forest Service, December 8, 2003 by Stephen J. Dinsmore.

Existing Conditions. The suitable habitat for the mountain plover is the long-term low structure grasslands. All of the grassland areas on Oglala National Grassland and Buffalo Gap National Grassland are considered potential mountain plover habitat, depending on the grazing intensity. Prairie dog colonies may be the best long-term habitat.

The only mountain plover documented in the project area in recent years occurred in Conata Basin in the summer of 2004 (Map E-43). None of the national grasslands and forests in the project area are considered in their current breeding range (Dinsmore 2003, Dechant et. al. 2003f). Their historic range included western Nebraska and extreme western South Dakota (Dinsmore 2003), which would include parts of Buffalo Gap National Grassland and Oglala National Grassland.

Direct, Indirect, and Cumulative Effects. The mountain plover feeds primarily on insects and other invertebrates. They do not eat grain and are therefore not susceptible to primary poisoning by ingesting rodenticide bait. Also, they leave their breeding ground in Wyoming (the closest population) by mid October, so most would have migrated prior to October when rodenticide use would begin.

Mountain plovers could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a mountain plover for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a plover. The fact that the mountain plover is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

Mountain plovers prefer large, flat grassland expanses with sparse, short vegetation, and bare ground. The mountain plover is not dependent on prairie dog colonies for its existence, but the prairie dog colonies would be one of the few places in the project area that would produce the vegetation characteristics required by the mountain plover in the long term. The over riding factor influencing grassland structure is livestock grazing. Objectives, standards and guidelines in the LRMP establish desired levels of grassland structure.

DETERMINATION OF EFFECT AND RATIONALE FOR THE MOUNTAIN PLOVER

Buffalo Gap N.G & Oglala N.G. The biological determination for mountain plover under the preferred alternative is: *"no impact"*.

Rationale: With this alternative, it is predicted that there could be between 28,400 and 39,800 acres of prairie dog colonies on the Buffalo Gap National Grassland & Oglala National Grassland combined by 2012, and it is anticipated that the annual use of rodenticide would range from 7,210 to 9,210 acres on the two grasslands.

Regulated shooting in the Conata Basin ferret habitat can be considered and authorized in the one-half mile zone along private and tribal boundaries if minimum ferret population thresholds continue to be met and incidental take of ferrets is not likely to exceed the set limits.

The shooting closure prescribed in the LRMP for ferret habitat applies equally to the Smithwick ferret habitat on Buffalo Gap National Grassland. However, shooting restrictions or closures will not be considered by the Forest Service until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

The mountain plover feeds predominantly on insects and other invertebrates. They will not eat the poison grain and are not susceptible to being poisoned by the zinc phosphide treated grain. Also, they leave their breeding ground in Wyoming (the closest population) by mid October, so the bulk of the birds would be gone when the rodenticide application takes place.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a mountain plover, but the effects will still be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall mountain plover populations.

With this alternative, it is predicted that there could be between 28,400 and 39,800 acres of prairie dog colonies on the two grasslands combined by 2012. These acres could be used by mountain plovers.

The overriding factor in the "no impact" determination is the lack of a resident mountain plover population on Buffalo Gap National Grassland (SDOU 1991).

BREWER'S SPARROW *Spizella breweri*

Distribution and Status. Brewer's sparrows breed from southern British Columbia east to southeastern Alberta and southwestern Saskatchewan, south through the Columbia River Basin east of the Cascade crest, and throughout the Great Basin east of the Sierra Nevada crest as far south as southern California, southern Nevada, and northern Arizona. The species regularly breeds east to northwestern New Mexico, eastern Colorado, northwestern Nebraska, western South Dakota, and southwestern North Dakota, with sporadic breeding in western Nebraska, extreme southwestern Kansas, western Oklahoma, and northern Texas (Walker 2004). In South Dakota they are listed as an uncommon summer resident in the extreme southeast and northwest

(SDOU 1991, Holmes and Johnson 2005). In Nebraska the have been documented in Sioux county (Ducey 1988, Mollhoff 2001, Sharp et al. 2001, Holmes and Johnson 2005).

Habitat. Brewer's sparrows are closely associated with shrublands dominated by big sagebrush (*Artemisia tridentata*). For that reason, they generally are considered a "sagebrush-obligate" or "shrubland-obligate" species (Walker 2004). Suitable habitat includes sagebrush-dominated shrublands with >10 percent average shrub cover and an average shrub height of 0.5 - 1.5 m (Walker 2004). In general, Brewer's sparrow abundance decreases as average shrub cover decreases below 10-13 percent, and Brewer's sparrows disappear entirely when average shrub cover decreases below 3-8 percent (Walker 2004). Brewer's sparrow abundance may decrease if shrub cover exceeds 50 percent (Walker 2004).

In spring and summer Brewer's sparrows consumes many insects (e.g., alfalfa weevils, aphids, beet leafhoppers, caterpillars, beetles) and in the fall and winter they feeds on seeds (NatureServe 2004).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G5, N5B, N5N; Nebraska – S4; South Dakota – S2B; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Recovery and Conservation Planning. A conservation assessment for the brewer's sparrow was prepared for the Forest Service, December 8, 2003 by Jennifer Holmes and Matthew Johnson in 2005.

Existing Conditions. Map E-44 displays the places where Brewer's sparrows have been documented. The only sagebrush habitat large enough to have a substantial Brewer's sparrow population occurs in the western part of the Buffalo Gap National Grassland. This geographic area is identified in the LRMP as the Fall River West (FRW) Geographic area. Within the FRW the LRMP identifies a 45,760 – acre area as 3.64 Special Plant and Wildlife Habitat: Sage Grouse. This is the sagebrush habitat and where the Brewer's sparrow can be found. The FRRD has initiated a study in this area in which 72 bird point count plots were set up and surveys were completed in June of 2003 and 2004. In 2003, Brewer's sparrows were detected on 51 percent of the plots, and in 2004, 42 percent of the counts had Brewer's sparrows. Small amounts of sagebrush habitat occur on Oglala National Grassland. To date, no brewer's sparrows have been found on the Oglala National Grassland but there are records of Brewer's sparrows in the vicinity (Ducey 1988, Mollhoff 2001, Sharp et al. 2001).

Direct, Indirect, and Cumulative Effects. The Brewer's sparrow feeds primarily on seeds in the fall and winter. If they are in the area during rodenticide use, they would be susceptible to primary poisoning.

The Brewer's sparrow is a summer resident of the grasslands. They migrate in September. The latest dates of migration in South Dakota were listed as 27th of September and the 2nd of October (SDOU 1991). Generally they would not be in the area after October 1 when rodenticide use would commence. Also, Brewer's sparrows do not inhabit areas in which the average shrub cover is below 3-8 percent (Walker 2004). Sagebrush in general is absent from prairie dog

colonies. Even if Brewer's sparrows are present in the area when rodenticide is applied, they do not inhabit prairie dog colonies, so they would not be exposed to rodenticide bait under normal circumstances.

Sagebrush shrubland is the habitat of the Brewer's sparrow. Prairie dogs tend to avoid the sagebrush habitat because they are less able to see predators and are more susceptible to predation. One of the prairie dog colonies in this area is surrounded by sagebrush and has not appreciably expanded in the last 15 years.

DETERMINATION OF EFFECT AND RATIONALE FOR THE BREWER'S SPARROW

Buffalo Gap N.G & Oglala N.G. The biological determination for Brewer's sparrows under the preferred alternative is: *"no impact"*.

Rationale: This alternative results in intermediate prairie dog colony acreages and rodenticide use levels (Table 2).

The Brewer's sparrow feeds primarily on seeds in the fall and winter. If they are in the area during rodenticide application, they would be susceptible to primary poisoning. The Brewer's sparrow is a summer resident of the grasslands. They migrate in September. The latest dates of migration in South Dakota were listed as 27th of September and the 2nd of October (SDOU 1991). In general, they would not be in the area after October 1 when the rodenticide use would begin. Also, Brewer's sparrows do not inhabit areas in which the average shrub cover is below 3-8 percent (Walker 2004). Sagebrush in general is absent from prairie dog colonies. Even if Brewer's sparrows are present in the area when rodenticide is applied, they do not inhabit prairie dog colonies, so they would not be exposed to the rodenticide under normal circumstances.

With this alternative, it is predicted that there could be between 600 and 800 acres of prairie dog colonies on the FFRD WGA by 2012 and 1,400 to 1,800 acres on the Oglala National Grassland. Even if the prairie dogs did invade the sagebrush area, this would not be enough to effect the Brewer's sparrow population.

GRASSHOPPER SPARROW *Ammodramus savannarum*

Distribution and Status. The grasshopper sparrow has a widespread distribution throughout most of the Americas, but it often breeds locally and is considered rare to uncommon in much of its range (Vickery 1996) (Dechant 2003h).

The grasshopper sparrow is considered globally "secure" by the Natural Heritage Program because of its wide distribution across North America. However, according to the Breeding Bird Survey, grasshopper sparrow populations have declined by over 60 percent during the past 25 years. The U.S. Fish and Wildlife Service list the grasshopper sparrow as a species of special concern. Within the states of Forest Service Region 2, which represent the core of this species breeding range, grasshopper sparrow populations have also exhibited long-term declines. Declines in Colorado and South Dakota have outpaced national trends.

These small ground-dwellers sing in a hissing, insect-like buzz (Sibley 2000). Hawks are infrequent predators, and loggerhead shrikes commonly impale adult and immature grasshopper

sparrows (Vickery 1996). Low-level parasitization of grasshopper sparrow nests by brown-headed cowbirds also occurs (Smith 1968).

Habitat. During the nesting season, these sparrows generally occupy intermediate height grassland habitat and prefer drier, sparser sites in tall grass prairies and thicker, brushier sites in short-grass prairies (Vickery 1996). The sparrow prefers moderately open grasslands and prairies with patchy bare ground, avoiding extensive shrub cover (Vickery 1996). They have been known to inhabit bunchgrasses over sod-forming grasses, although research on Fort Pierre National Grassland did not confirm this (Fritchner 1998). On Fort Pierre National Grassland, positive correlations of grasshopper sparrows with mean vegetation height, litter depth, and visual obstruction indicated western wheatgrass (*Agropyron smithii*) and green needlegrass (*Stipa viridula*) habitats supported the highest densities of grasshopper sparrows (Fritchner 1998), and there was a negative correlation with bare ground and short buffalograss (*Buchloe dactyloides*). These birds are more likely to occupy large tracts of habitat than small fragments (Samson 1980). They nest near the ground in a domed structure in over-hanging grasses with a side entrance (Vickery 1996). The birds forage on open ground in summer to satisfy a diet that consists of about 60 percent invertebrates—preferably grasshoppers—and 40 percent seeds (Vickery 1996). Grasshopper sparrows have been known to use prairie dog colonies in South Dakota (Sharps and Uresk 1990).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G5, N5B, N5N; Nebraska – S4; South Dakota – S4B; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. Maps E-45 through E-46 displays the recorded locations of grasshopper sparrows on the various units in the project area. These prairie sparrows are summer residents across the project area (Peterson 1991; Graupman et al. 1991; Peterson 1993; Mollhoff et al. 1993). Fall migration usually occurs from mid-August through early September, although individuals may be in South Dakota until about October 26 (Tallman et al. 2002).

Direct, Indirect, and Cumulative Effects. This species eats grain and if they are in the area during rodenticide use, they would be susceptible to primary poisoning. They usually migrate from the area well before rodenticide is applied in prairie dog colonies. The short grasses of prairie dog colonies are not preferred habitat, and there are not likely to be many, if any, grasshopper sparrows in the immediate vicinity when the rodenticide is applied.

Eliminating prairie dogs would result in the vegetation on the colony changing from shortgrass to a mixed-grass prairie that supports taller vegetation, like western wheatgrass and green needlegrass. Small prairie dog colonies may provide some foraging sites for this bird, but generally, mixed-grass prairie is better habitat for this species than large expanses of short structure grassland. As a result, rodenticide application to prairie dogs would increase habitat for grasshopper sparrows.

Grasshopper sparrows could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a grasshopper sparrow for a prairie dog. The short grasses of prairie dog colonies are not preferred habitat, and there are not likely to be many, if

any, grasshopper sparrows in the immediate vicinity when shooting is occurring. It is always possible for an unethical prairie dog shooter to kill a grasshopper sparrow. The fact that the grasshopper sparrow is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Gunfire and other hunter activities may scare birds locally, but this will not be a factor concerning their population viability on the area.

Cumulative effects detrimental to grasshopper sparrows include urban development and conversion of grasslands to cropland (Slater 2004). Grasshopper sparrows require intermediate amounts of grass cover, so they benefit from frequent disturbances in the lusher, more productive eastern grasslands of the region, where grass is taller and recovers more quickly (Slater 2004). In the region's arid, shorter grasslands, frequent disturbances negatively affect sparrow habitat (Slater 2004). Overgrazing in mixed and shortgrass prairies is a serious threat to grasshopper sparrow habitats (Slater 2004). They are area-sensitive birds, preferring larger grassland patches, and fragmentation of grassland poses a threat (Slater 2004).

DETERMINATION OF EFFECT AND RATIONALE FOR THE GRASSHOPPER SPARROW

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for grasshopper sparrows under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".*

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

The grasshopper sparrow eats grain and if they are in the area during rodenticide application, they would be susceptible to primary poisoning. Most migrate from the area well before rodenticide use begins.

Rodenticide use would reduce acres of prairie dog colonies. On these areas, management that favors mid-height grasses would result in less sod-bound short grasses and more nesting habitat for grasshopper sparrows.

Prairie dog colony acreages would increase under this alternative, which would reduce the extent of area effective as grasshopper sparrow habitat, especially as nesting cover. There are currently around 30,000 acres of active prairie dog colonies in the affected area and it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012. Using these numbers, there could be a loss of up to 11,000 acres of grasshopper sparrow habitat if this alternative were implemented.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a grasshopper sparrow, but the effects will still be discountable (see the above discussion).

Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog colony in this analysis. These actions will not have any measurable effect on overall grasshopper sparrow populations

TRUMPETER SWAN *Cygnus buccinator*

Distribution and Status. This is North America's largest swan (Sibley 2000). Once, conservationists feared for its survival, but its status has improved, and the bird is no longer considered endangered (Bellrose1976). This swan was introduced in 1960-1963 to LaCreek National Wildlife Refuge (Tallman et al. 2002), which is southeast of the Conata Basin of the Wall District, Buffalo Gap National Grassland. Most of the local population currently winters at LaCreek or further south into the Nebraska Sand Hills.

Habitat. Trumpeter swans live on shallow lakes and open marshes (Tallman et al. 2002). Their diet is composed of a variety marsh and aquatic plants, including tubers, stems, leaves, and seeds (Bellrose1976).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G4, N4B, N4N; Nebraska – S2; South Dakota – S3B, S3N; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. Swans have nested and raised young on several ponds on Buffalo Gap National Grassland with one pair nesting numerous times in Conata Basin (NNF files)(Map E-47). Nesting occurs mid-April through July, although some nesting activity has been known to occur as late as September (Tallman et al. 2002).

Direct, Indirect, and Cumulative Effects. Since swans eat seeds, they could be susceptible to primary poisoning. Ducks and geese have been poisoned by eating grain baits in agricultural fields (Tietjen 1976). Although prairie dog rodenticide is not applied till after this species nesting season, swans can still be in the area until pond freeze-up typically in November. The activities of a crew applying rodenticide would not adversely affect swans; in fact, human activity might deter swans from using the area where rodenticide is being applied.

Changes in vegetation structure due to increases or decreases in prairie dog acres probably would not affect trumpeter swans, since they utilize primarily wetland habitats.

Trumpeter swans could be shot or injured by prairie dog shooters, but this would be rare and deliberate, since it is unlikely to mistake a trumpeter swan for a prairie dog. It is always possible for an unethical prairie dog shooter to kill a swan. The fact that the trumpeter swan is a protected species and it is against the law to kill or harass them should also be a deterrent. There are very stiff penalties for killing or injuring a protected species, and this is well known. Concentrated prairie dog shooting near trumpeter swan nests might cause nest abandonment.

DETERMINATION OF EFFECT AND RATIONALE FOR THE TRUMPETER SWAN

Buffalo Gap N.G: The biological determination for trumpeter swans under the preferred alternative is: *"may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing"*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 27,000 and 38,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to a range of 6,800 to 8,700 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Individual swans might eat rodenticide bait if it is spread around ponds that they are using. Changes in vegetation structure due to increases or decreases in prairie dog acres probably would not affect trumpeter swans, since wetlands are their primary habitats.

The preferred alternative will increase the chance of a prairie dog shooter coming into contact with a trumpeter swan, but the effects will be discountable (see the above discussion). Shooting within the half mile boundary management zone in Conata Basin will be used to augment rodenticide use. Shooting will not change the acreages of prairie dog habitat in this analysis. Shooting in the Smithwick area could likely slow the growth of the prairie dog colonies and reduce the densities of prairie dogs within the colony. This will not have any measurable effect on overall trumpeter swans populations.

REGAL FRITILLARY *Speyeria idalia*

Distribution and Status. These colorful butterflies historically occurred in the central and northeast United States (Scott 1986), although they have rapidly declined from the eastern portion of the range in recent years (Royer and Marrone 1992). Regal fritillaries occupy suitable habitat statewide in South Dakota (Royer and Marrone 1992).

Habitat. These insects inhabit wet meadows and tall grass prairie, in addition to undisturbed prairies in western South Dakota (Marrone 1992). Males emerge in late June, followed by females (Royer and Marrone 1992) who lay eggs near violets (*Viola spp.*) during late August through early September. Generally in about three weeks, upon hatching, larvae crawl to ground where they soon enter hibernation after sheltering themselves with leaves and duff (Royer and Marrone 1992). In spring, larvae feed on emergent violet leaves (Royer and Marrone 1992). On the Northern Prairie, larvae are thought to feed on Nuttall violet (*Viola nutallii*) (Marrone 1995), which grows in prairie sod (Van Bruggen 1971). For feeding adults, nectar sources are long-headed coneflower (*Ratibida columnifera*), purple coneflower (*Echinacera pallida* or *A. angustifolia*), fleabanes (*Erigeron spp.*), black-eyed susans (*Rudbeckia spp.*), gaillardias (*Gaillardia spp.*), milkweeds (*Asclepias spp.*), thistles (*Cirsium spp.*), bergamots (*Monarda spp.*), and blazing stars (*Liatris spp.*) (Moffat and McPhillips 1993). Native prairie with abundant wild flowers provides habitat for the butterflies while re-seeded rangelands without flowers may not (Marrone 1992). The species is always associated with open prairie or ungrazed, reverted pastures, generally in moist tallgrass virgin prairie (Royer and Marrone 1992). Conversion of

prairie to cropland, herbicide or pesticide application, overgrazing, and invasion of introduced plants threaten most remaining habitats (Royer and Marrone 1992).

ESA Status and Other Organizational Rankings

ESA Status	Conservation Status[1]
ESA (no status)	G3, N3; Nebraska – S3; South Dakota – S3; Forest Service - Sensitive

[1] Definitions - http://www.natureserve.org/explorer/nsranks.htm

Existing Conditions. In some years, individuals will be abundant and will scatter widely; while in other years, they are scarce (Marrone 1992).

Many regal fritillaries were spotted on Fort Pierre National Grassland during the 1990's; one observation has been recorded in western Buffalo Gap National Grassland (NNF files) (Maps E-48 through E-49).

Direct, Indirect, and Cumulative Effects. Application of zinc phosphide-treated oats should have no direct effect. Adults are not likely to be present and larvae should be hibernating when prairie dog rodenticide is applied. Even if the butterflies were present, they would not likely ingest the rodenticide or active ingredients.

Indirectly, the increase in the height and density of vegetation after rodenticides are applied. Later, prairie dogs will not be present to remove nectar-producing forbs and that may have an additional positive influence.

Shooting and related activities should not have a direct or indirect effect on this species, unless enough prairie dogs are shot so that there is a significant increase in vegetation height and density. In that instance, the butterflies may find the habitat more favorable.

Reductions in prairie dog populations may favor some individual butterflies if habitat and weather conditions are just right. However, positive effects probably will not be numerous or widespread. The best likelihood of positive effects helping this butterfly is on Fort Pierre National Grassland, where regal fritillaries are more abundant.

DETERMINATION OF EFFECT AND RATIONALE FOR THE REGAL FRITILLARY

Buffalo Gap N.G, Fort Pierre N.G., & Oglala N.G. The biological determination for regal fritillaries under the preferred alternative is: *"No impact"*.

Rationale: With the implementation of this alternative, it is predicted that there could be between 30,000 and 41,000 acres of prairie dog colonies on these units by 2012 and it is anticipated that rodenticide will be applied to a range of 7,330 and 9,420 acres of prairie dogs each year (Table 2). Some limited and regulated prairie dog shooting in the Conata Basin ferret reintroduction habitat could be allowed within the half mile boundary management zone. Shooting restrictions or closures will not be considered by the Forest Service in the Smithwick ferret reintroduction area until ferret reintroduction is proposed or scheduled by the U.S. Fish and Wildlife Service.

Application of prairie dog rodenticide should have no direct effect. When the rodenticide is applied, adults are not likely to be present and larvae should be hibernating. Even if the

butterflies were present, they would not likely ingest the poison. Rodenticide treatments to prairie dog colonies could increase vegetation height and density and could result in a greater diversity of nectar-producing forbs. This is most likely to occur on moist, more productive range sites.

SUMMARY OF DETERMINATIONS OF EFFECTS FOR SENSITIVE SPECIES

Table 9. Summary Sensitive Species Determinations

Common Name	Buffalo Gap N.G.	Fort Pierre N.G.	Oglala N.G.
MAMMALS			
Black-tailed prairie dog	MAII	MAII	MAII
Swift fox	MAII	MAII	MAII
BIRDS			
Greater prairie chicken	---	MAII	---
Long-billed curlew	MAII	MAII	MAII
Greater sage grouse	NI	---	---
Northern harrier	MAII	MAII	MAII
Ferruginous hawk	MAII	MAII	MAII
Chestnut-collared longspur	MAII	MAII	MAII
McCown's longspur	---	---	MAII
Short-eared owl	MAII	MAII	MAII
Western burrowing owl	MAII	MAII	MAII
Mountain plover	NI	---	---
Brewer's sparrow	NI	---	NI
Grasshopper sparrow	MAII	MAII	MAII
Trumpeter swan	MAII	MAII	MAII
INSECTS			
Regal fritillary	NI	NI	NI

NI - No impact -- where no effect is expected
BI - Beneficial impact -- where effects are expected to be beneficial and no negative effects are expected to occur
MAII - May adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing -- where effects in the project area are not expected to be significant and the species and its habitat will remain well distributed.
LRLV - Likely to result in a loss of viability in the Planning Area, or in a trend toward federal listing -- where effects are expected to be detrimental and substantial, and the species and its habitat will not be maintained in sufficient numbers or distribution through time.

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VIII. MAPS

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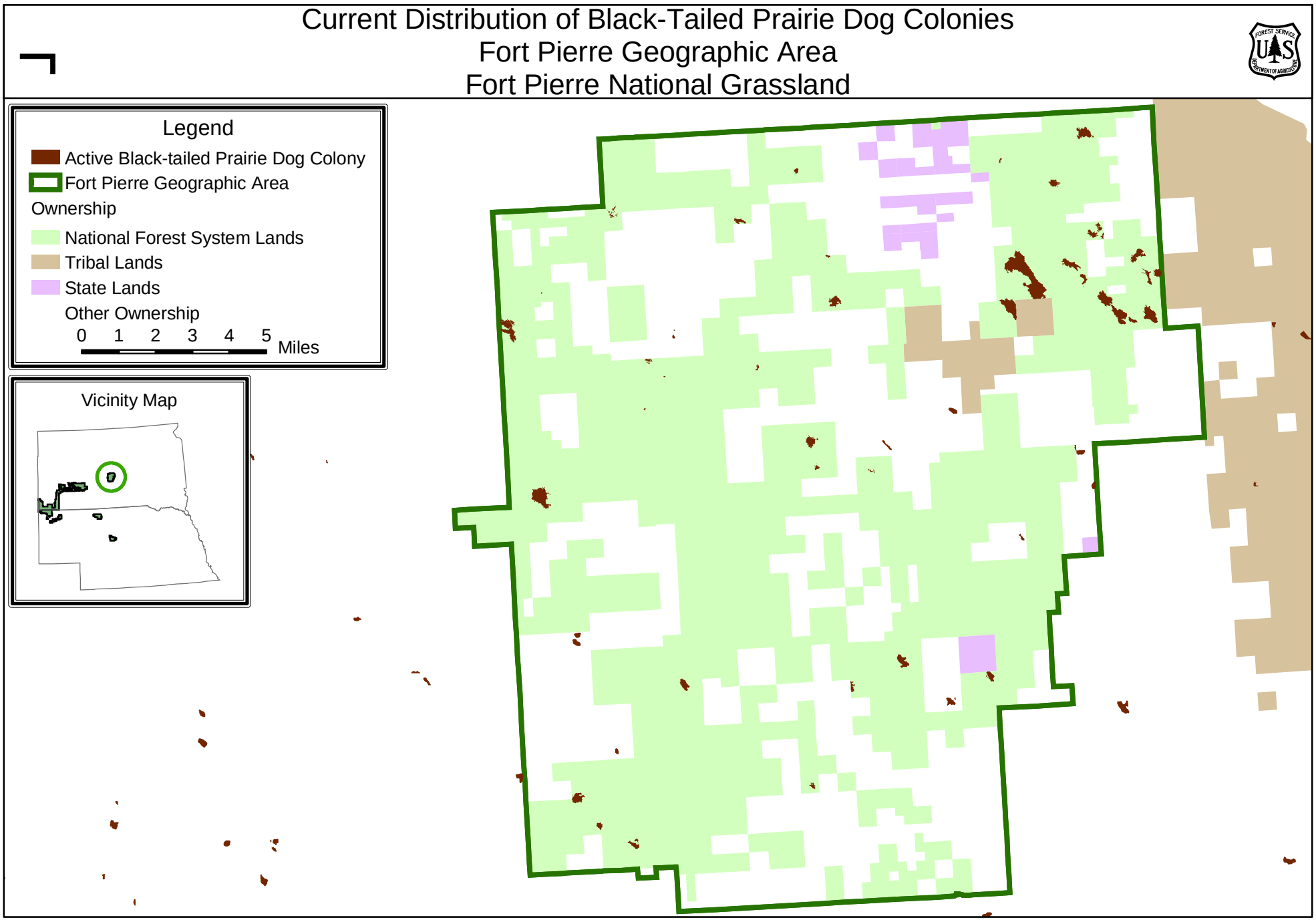
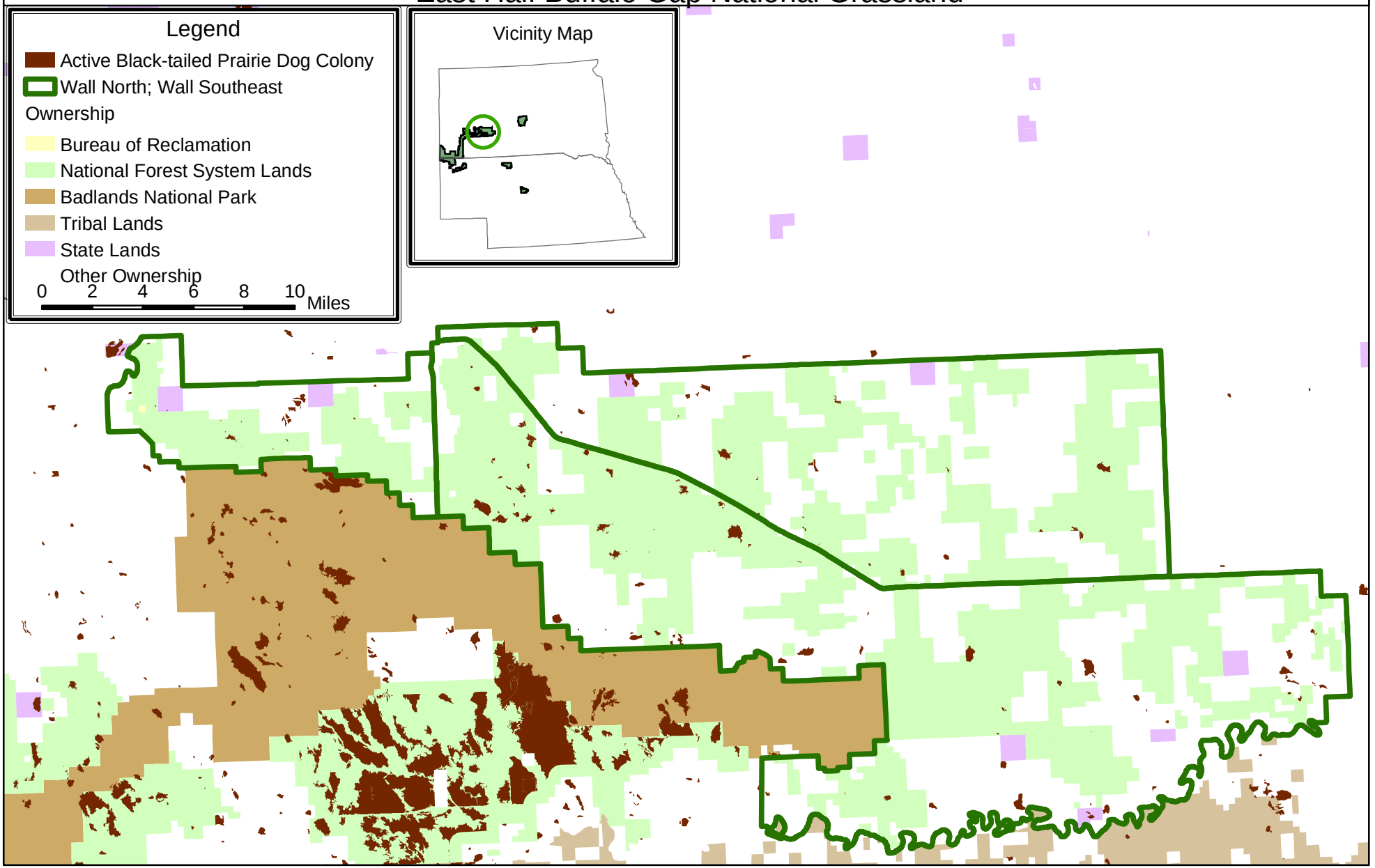
Current Distribution of Black-Tailed Prairie Dog Colonies
Fort Pierre Geographic Area
Fort Pierre National Grassland



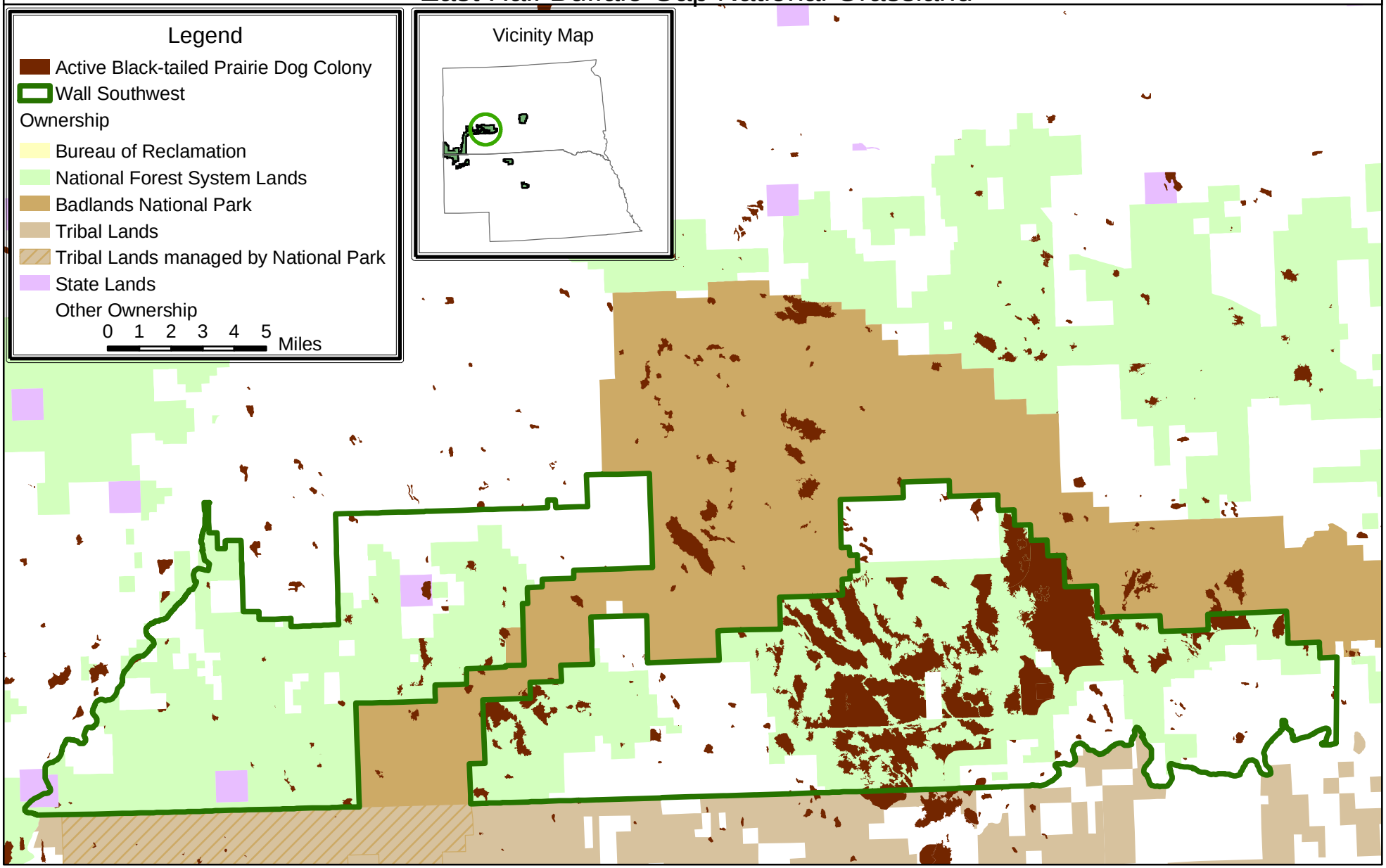
Map E-1

Current Distribution of Black-Tailed Prairie Dog Colonies
North & Southeast Geographic Areas
East Half Buffalo Gap National Grassland



Map E-2

Current Distribution of Black-Tailed Prairie Dog Colonies
Southwest Geographic Area
East Half Buffalo Gap National Grassland



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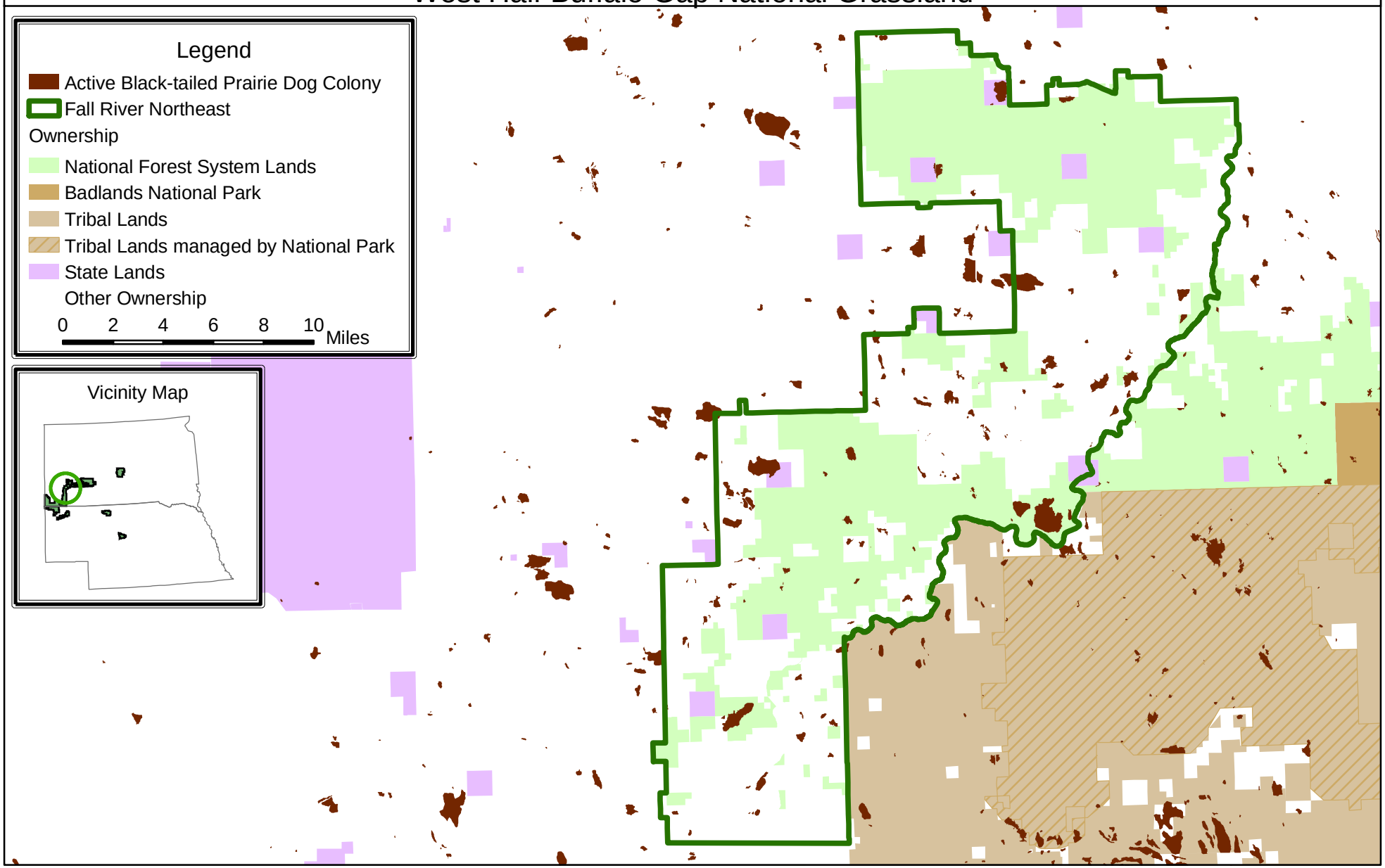
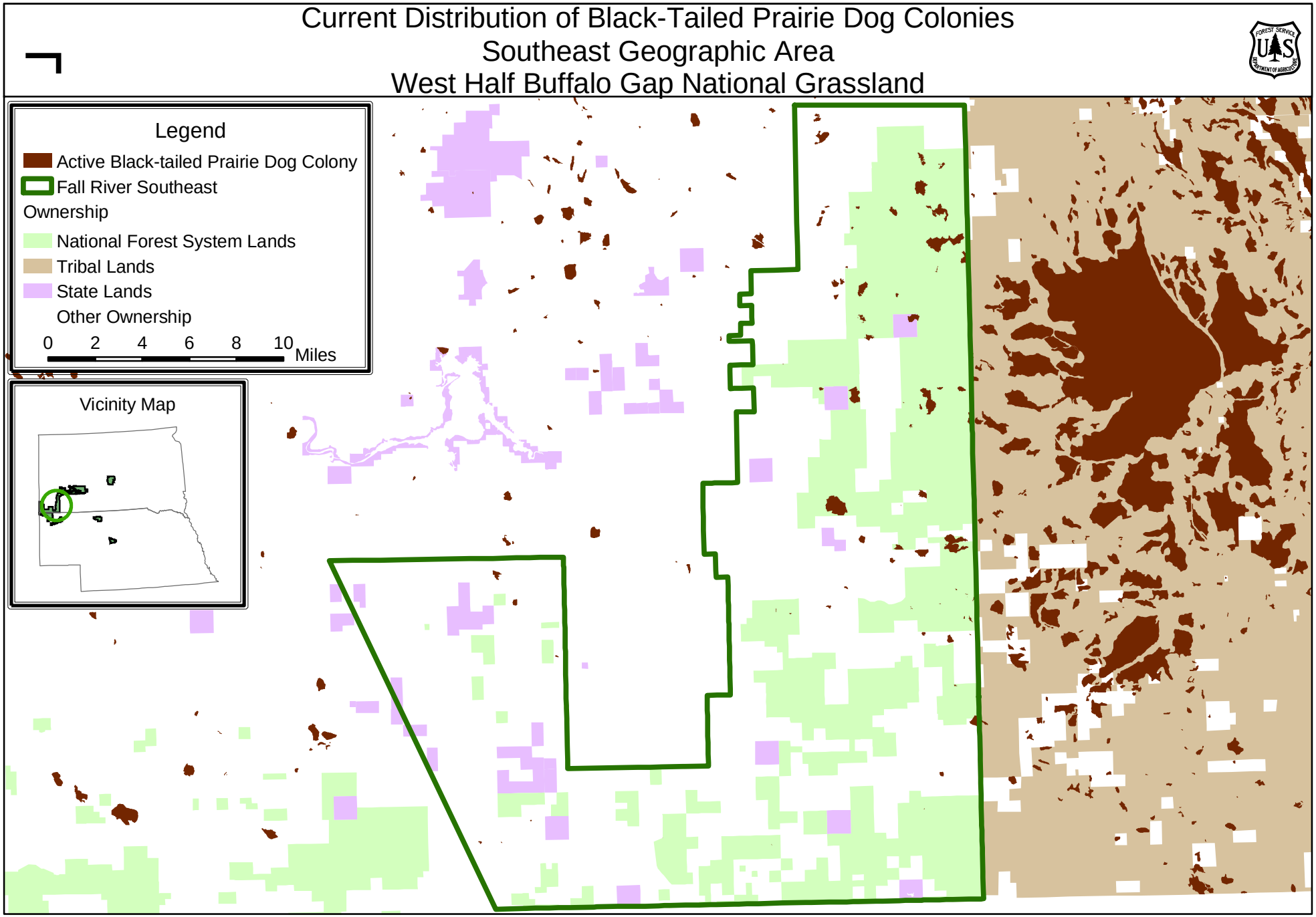
Current Distribution of Black-Tailed Prairie Dog Colonies
Northeast Geographic Area
West Half Buffalo Gap National Grassland



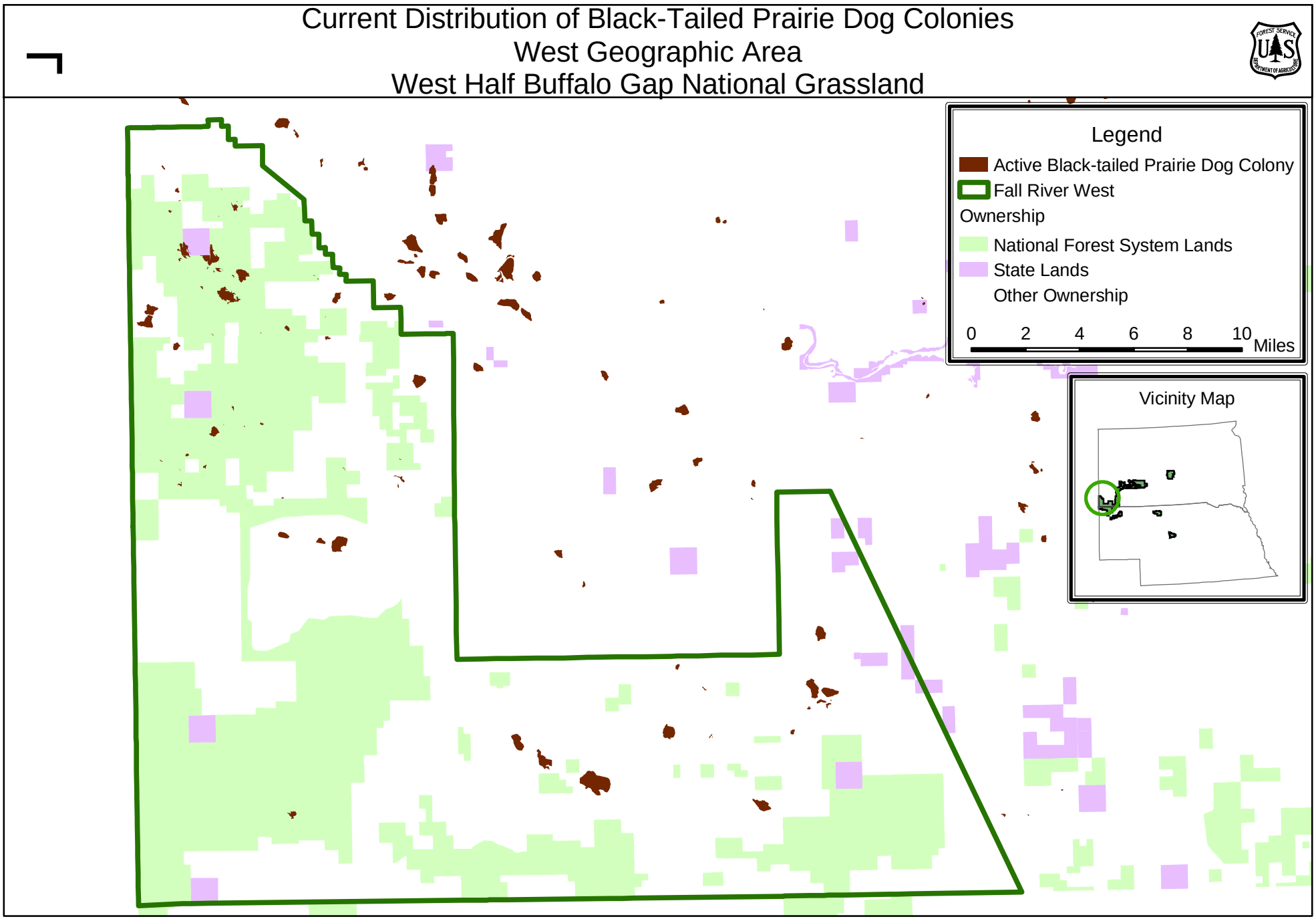
Map E-4

Current Distribution of Black-Tailed Prairie Dog Colonies
Southeast Geographic Area
West Half Buffalo Gap National Grassland



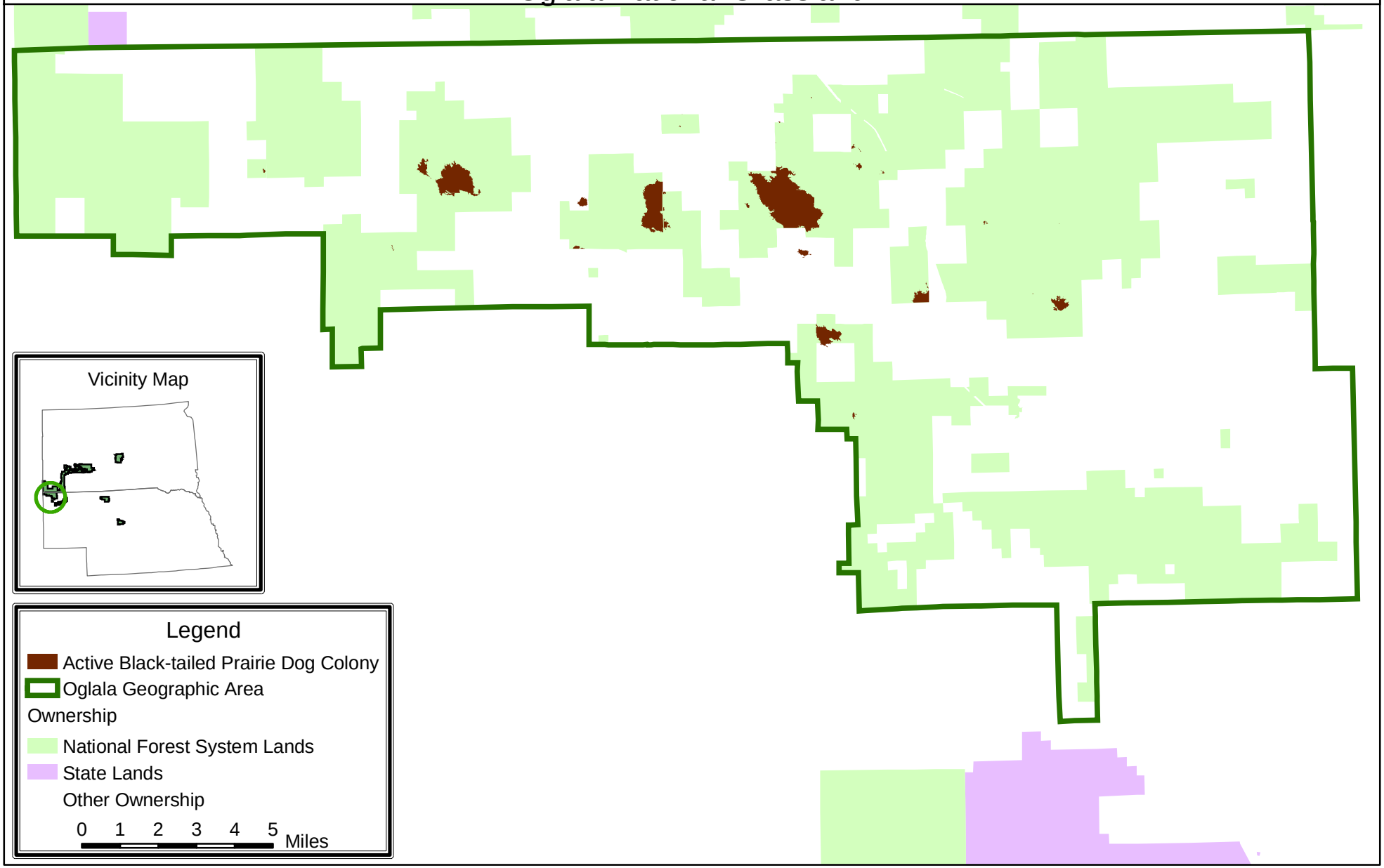
Map E-5

Current Distribution of Black-Tailed Prairie Dog Colonies
West Geographic Area
West Half Buffalo Gap National Grassland



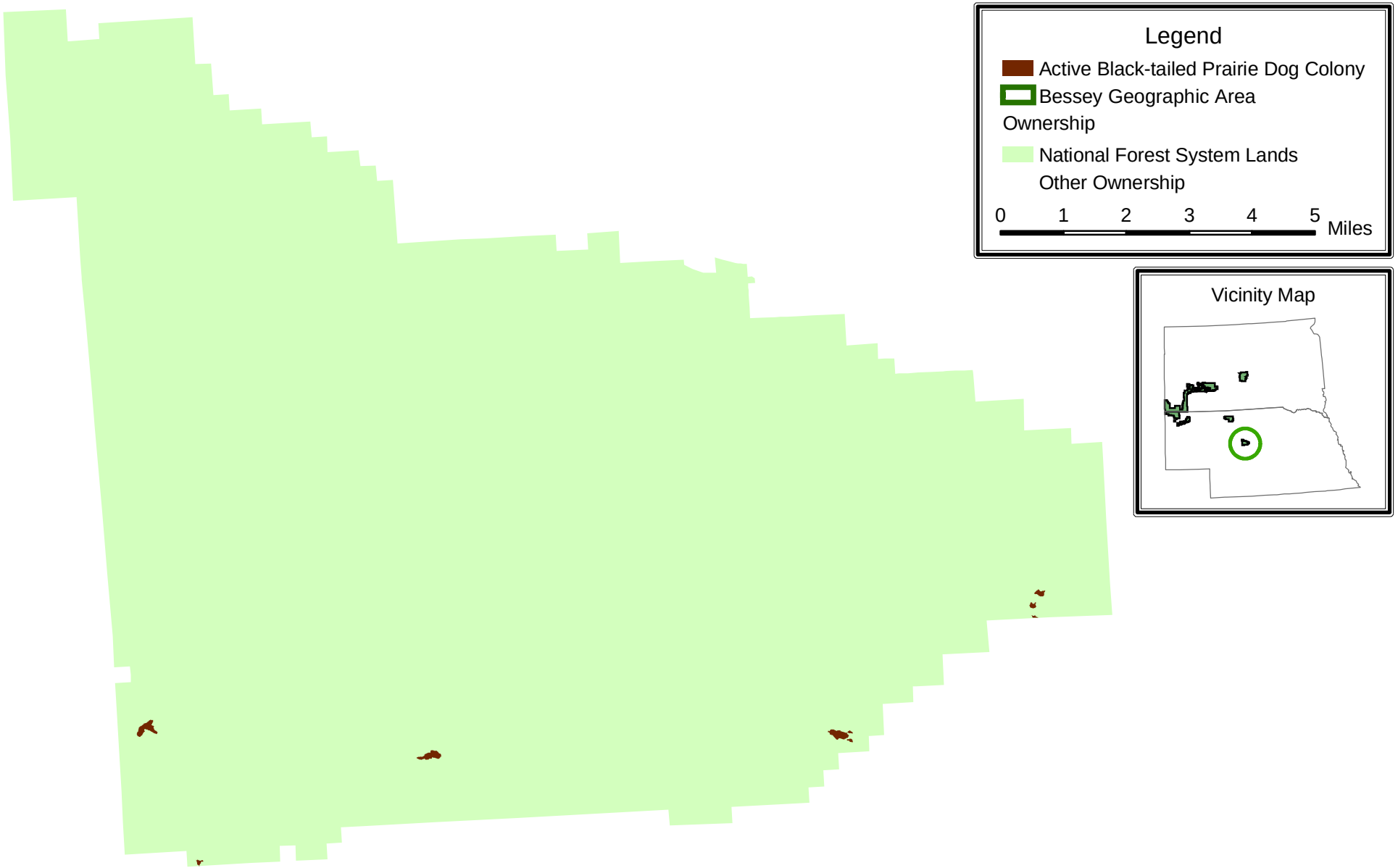
Map E-6

Current Distribution of Black-Tailed Prairie Dog Colonies
Oglala Geographic Area
Oglala National Grassland



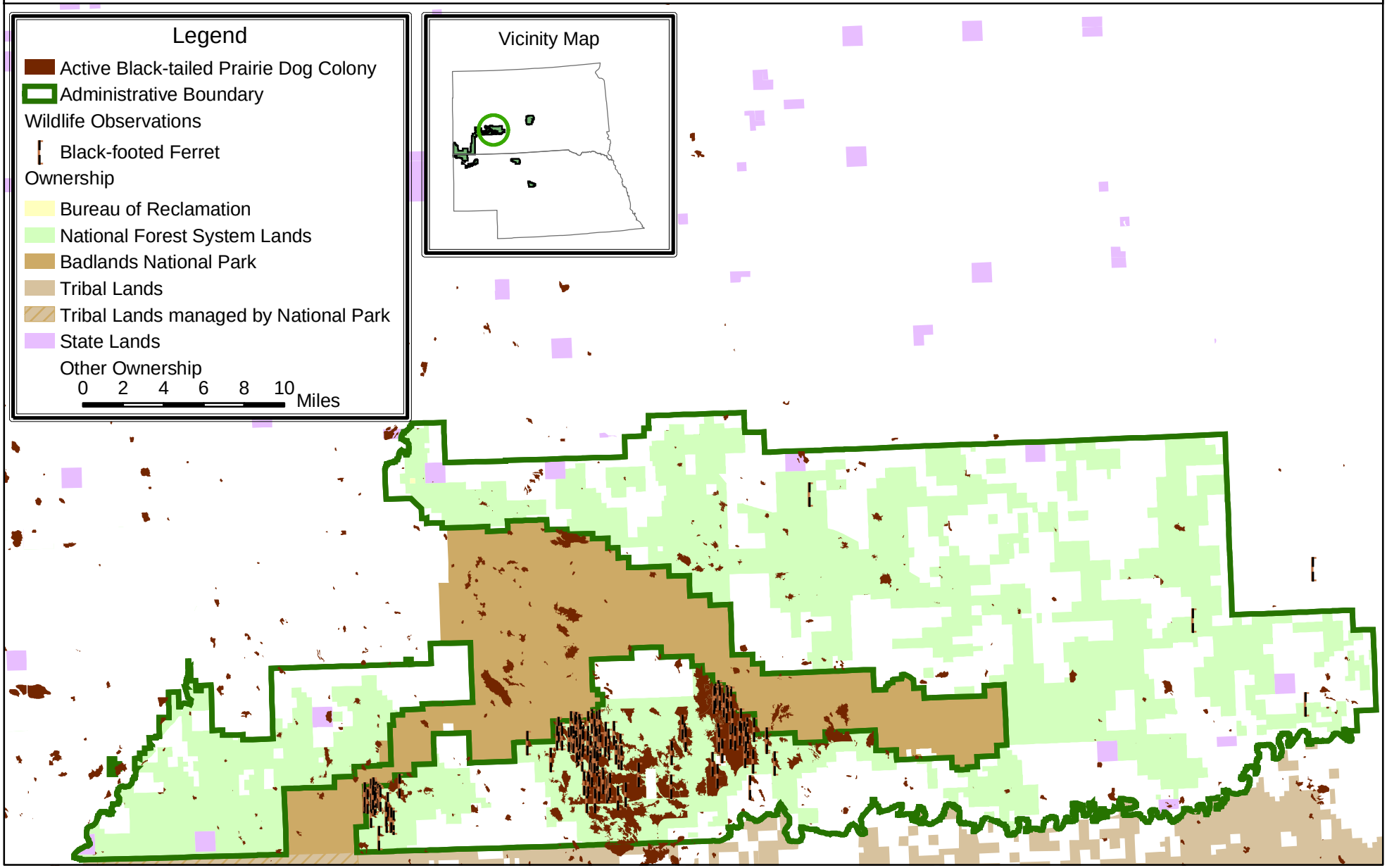
Map E-7

Current Distribution of Black-Tailed Prairie Dog Colonies
Bessey Geographic Area
Bessey Ranger District



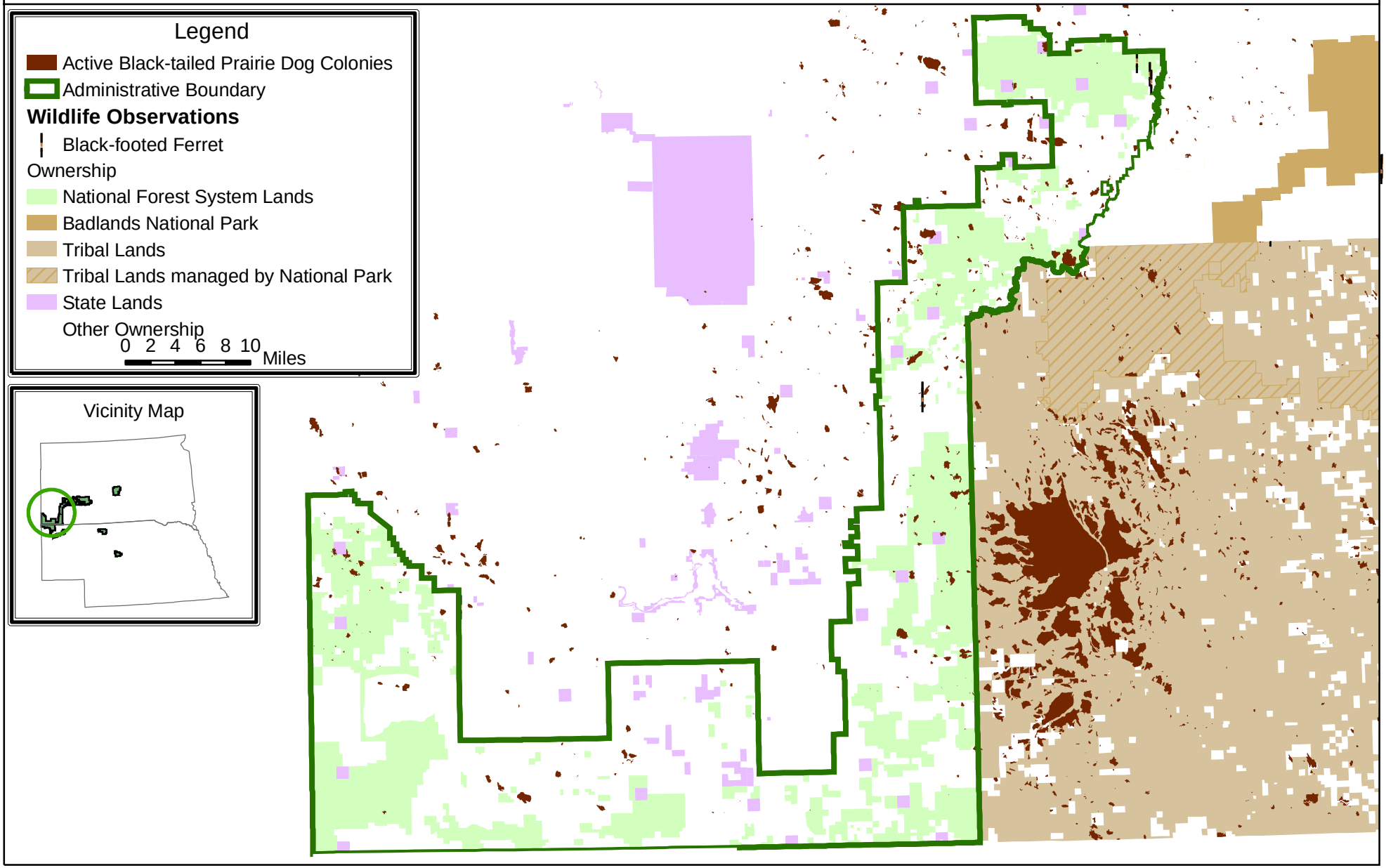
Map E-8

Black-footed Ferret Observations
East Half Buffalo Gap National Grassland



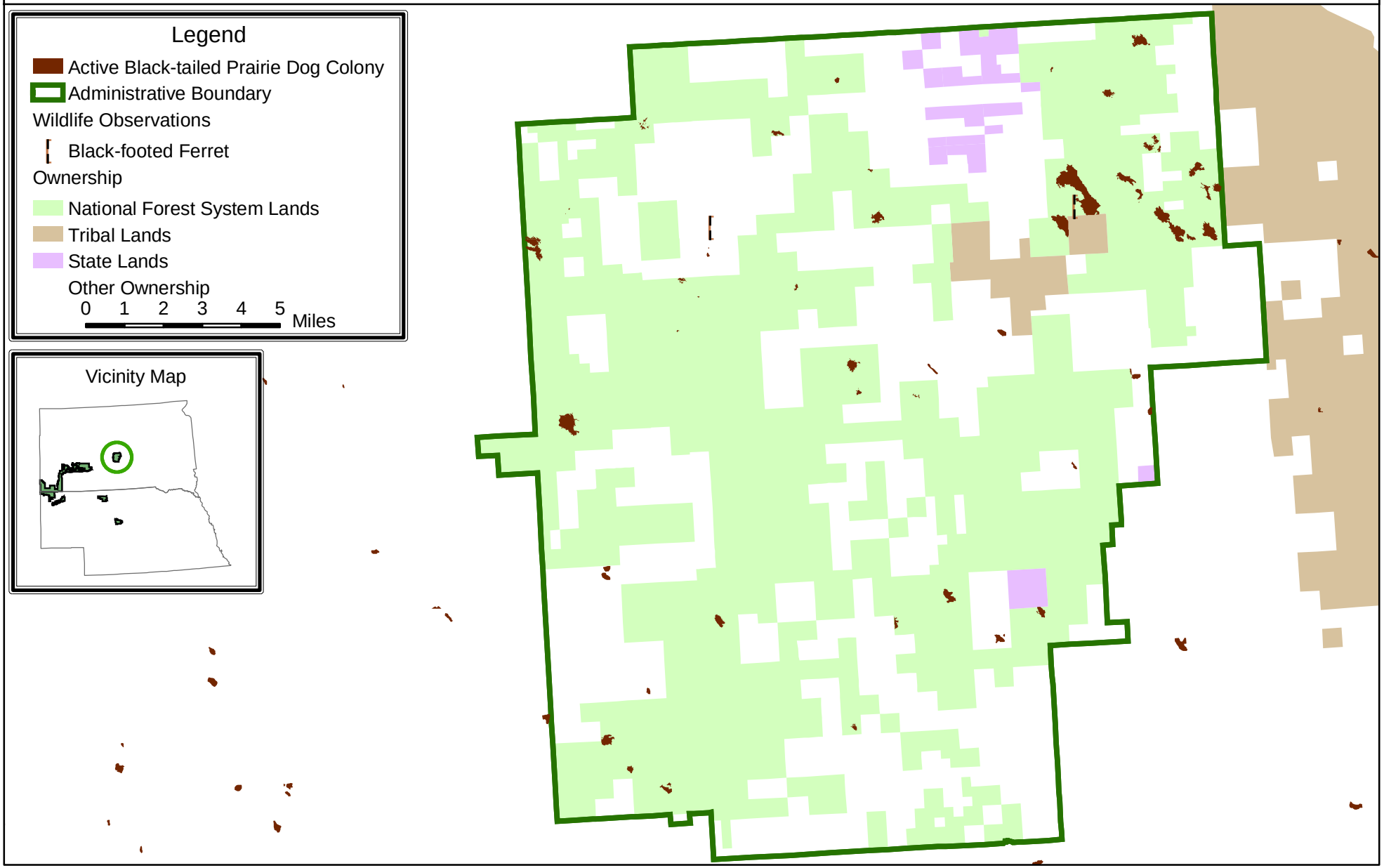
Map E-9a

Black-footed Ferret Observations
West Half Buffalo Gap National Grassland



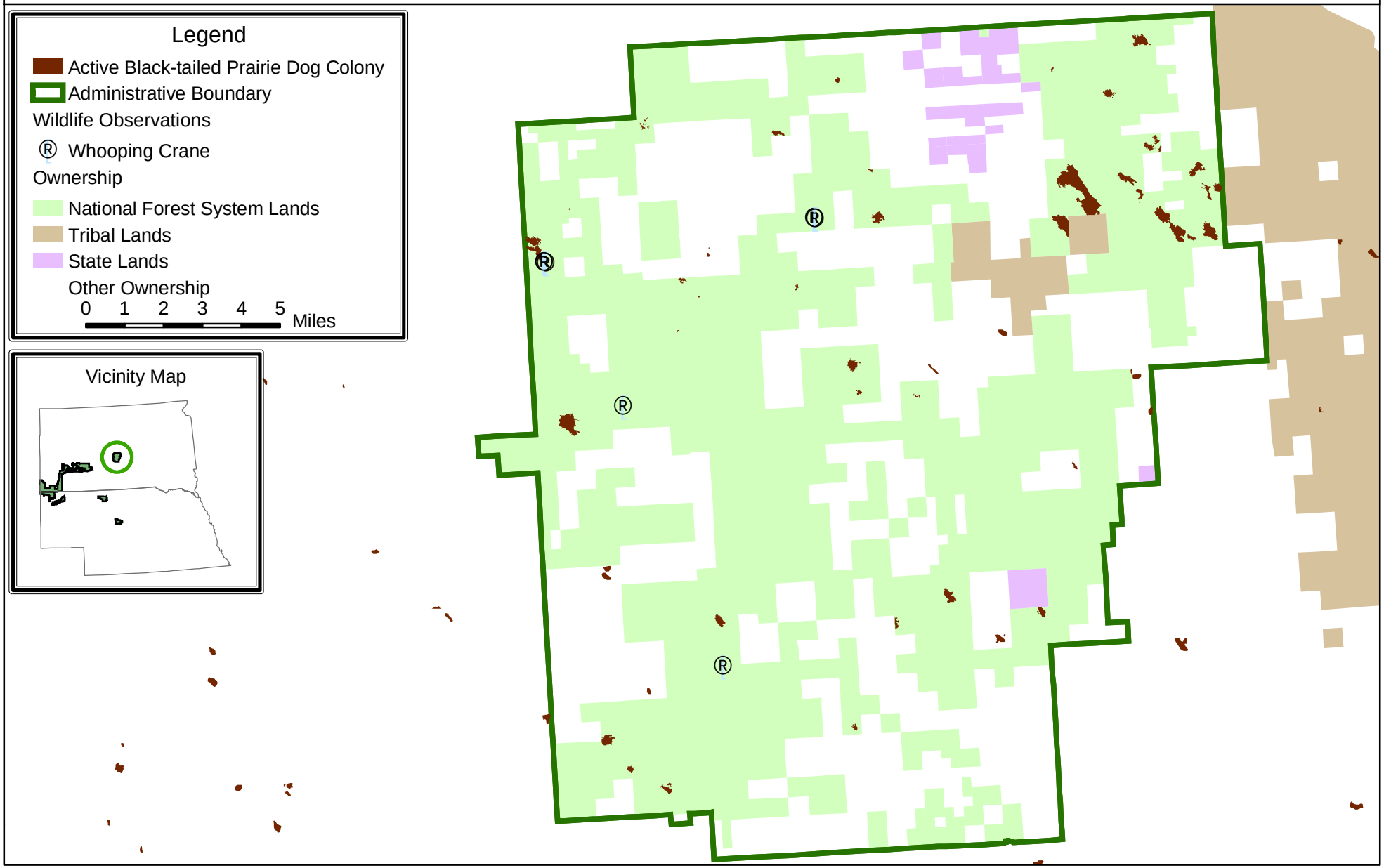
Map E-9b

Black-footed Ferret Observations
Fort Pierre National Grassland



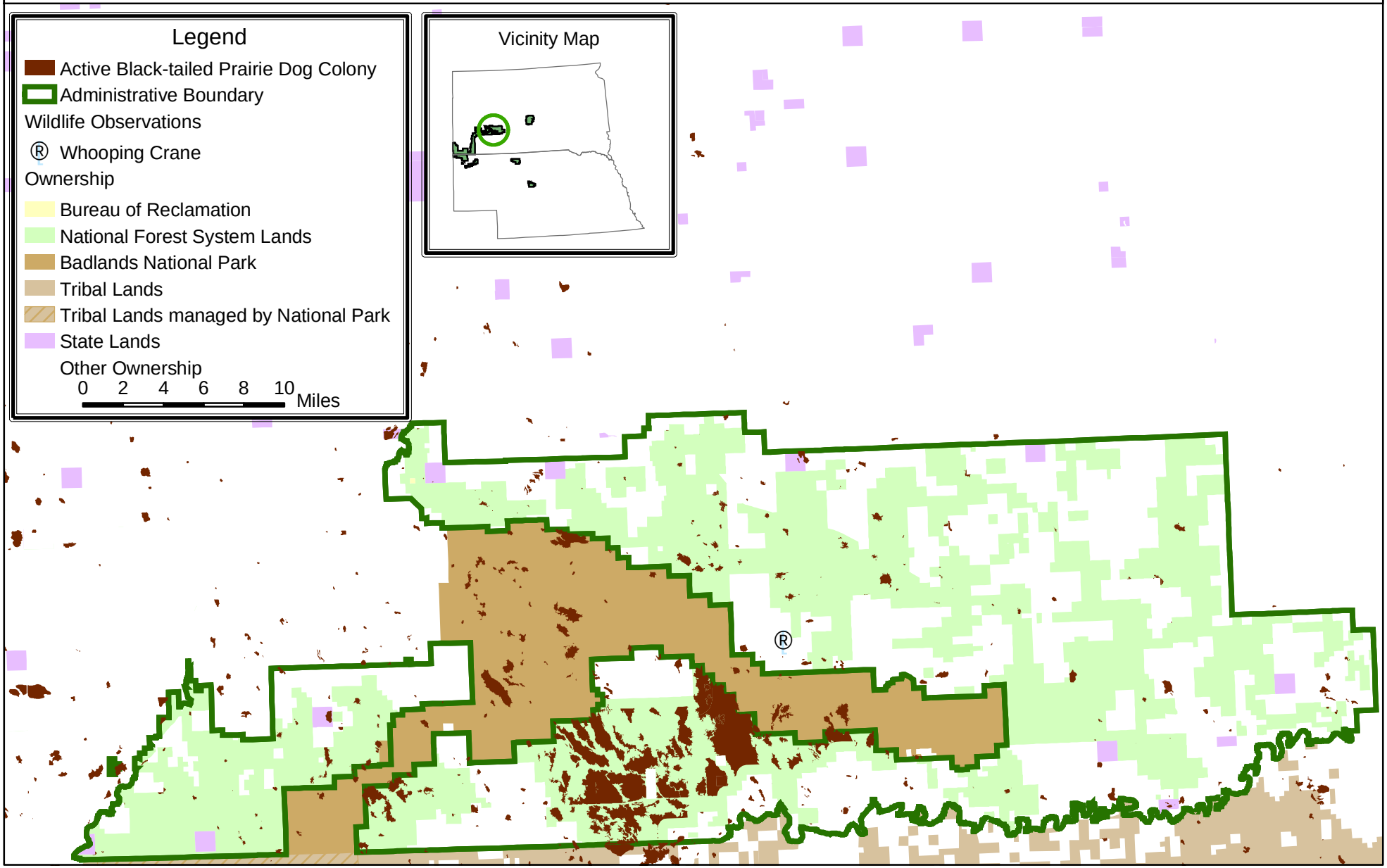
Map E-10

Whooping Crane Observations
Fort Pierre National Grassland



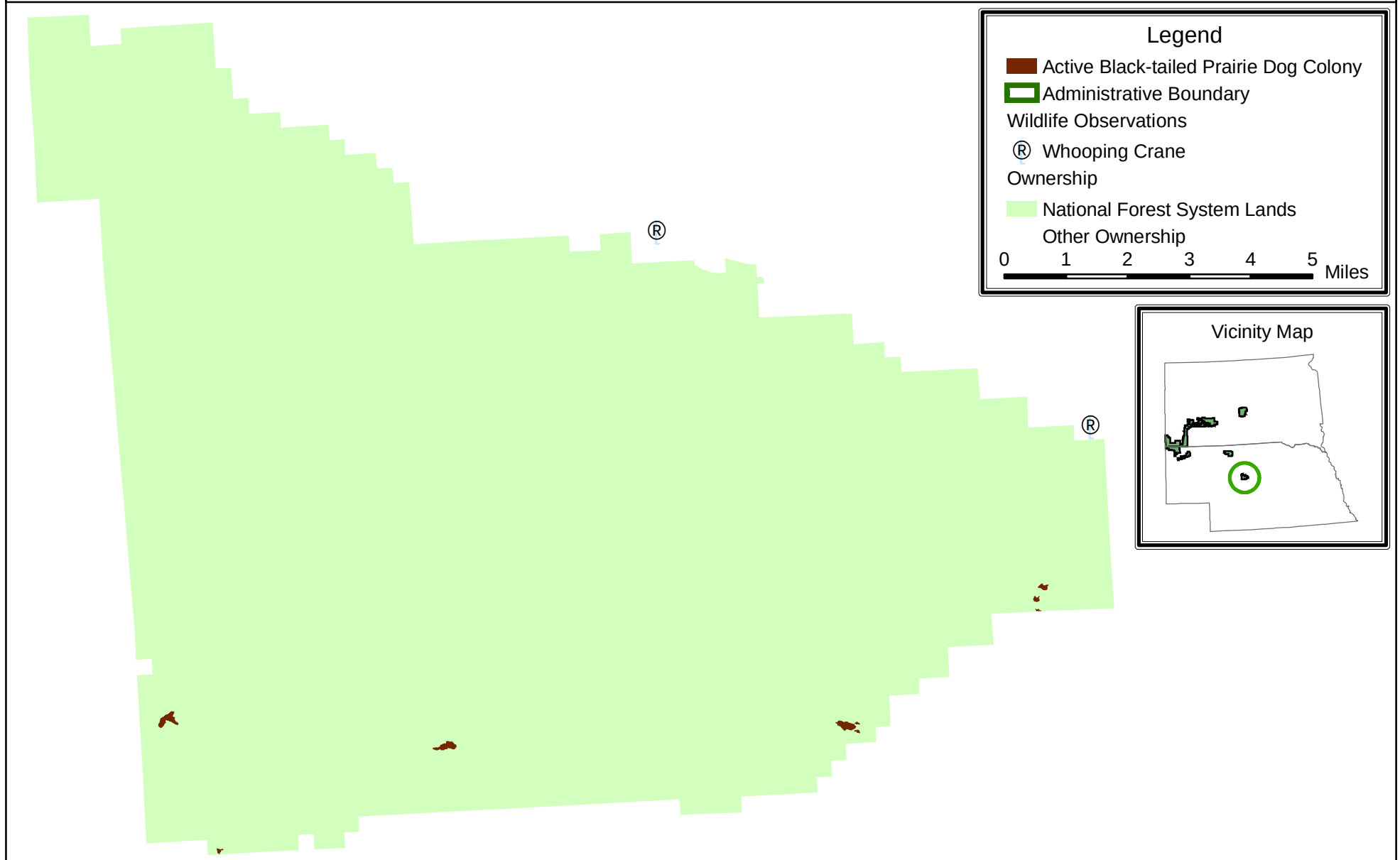
Map E-11

Whooping Crane Observations
East Half Buffalo Gap National Grassland



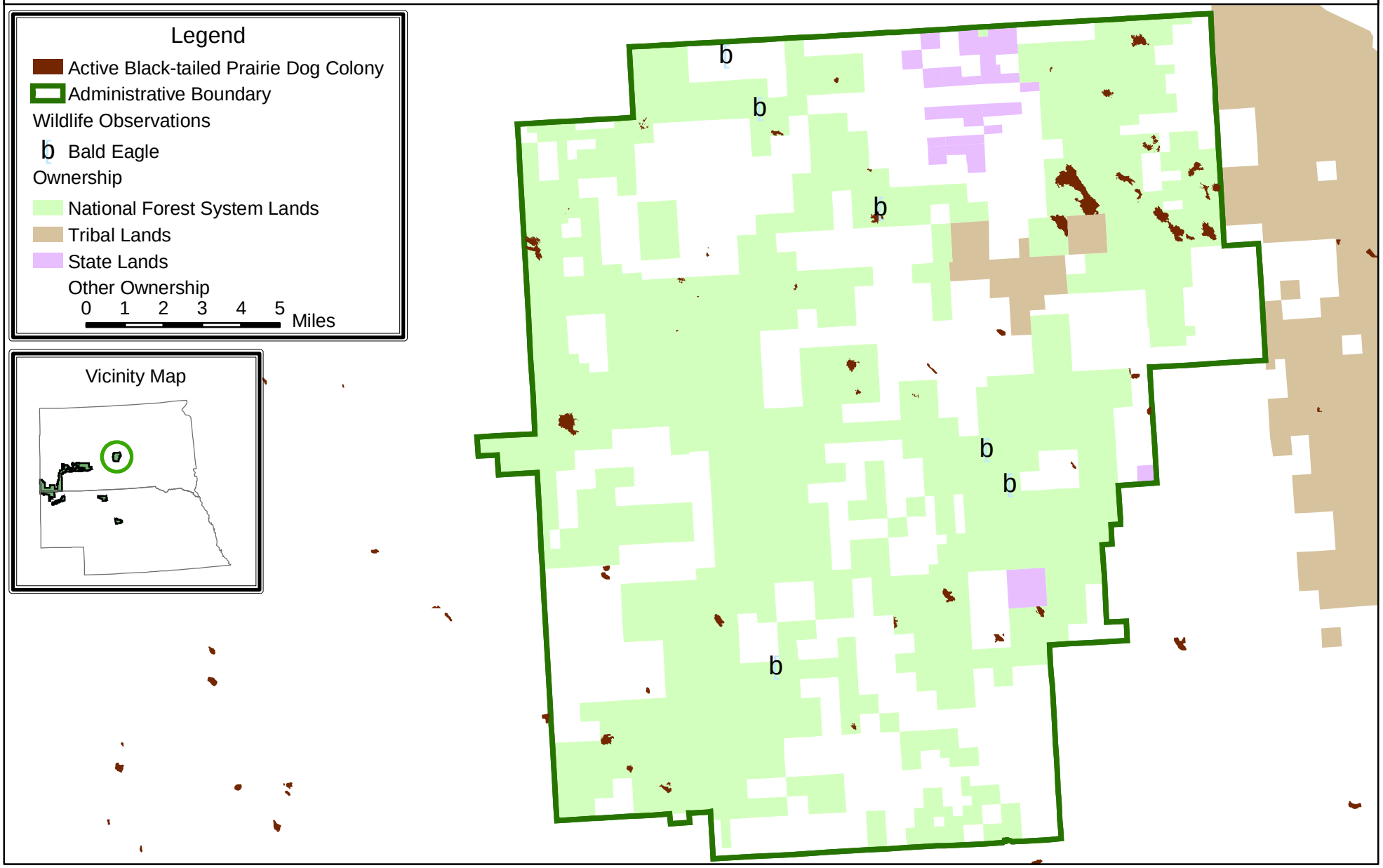
Map E-12

Whooping Crane Observations
Bessey Ranger District



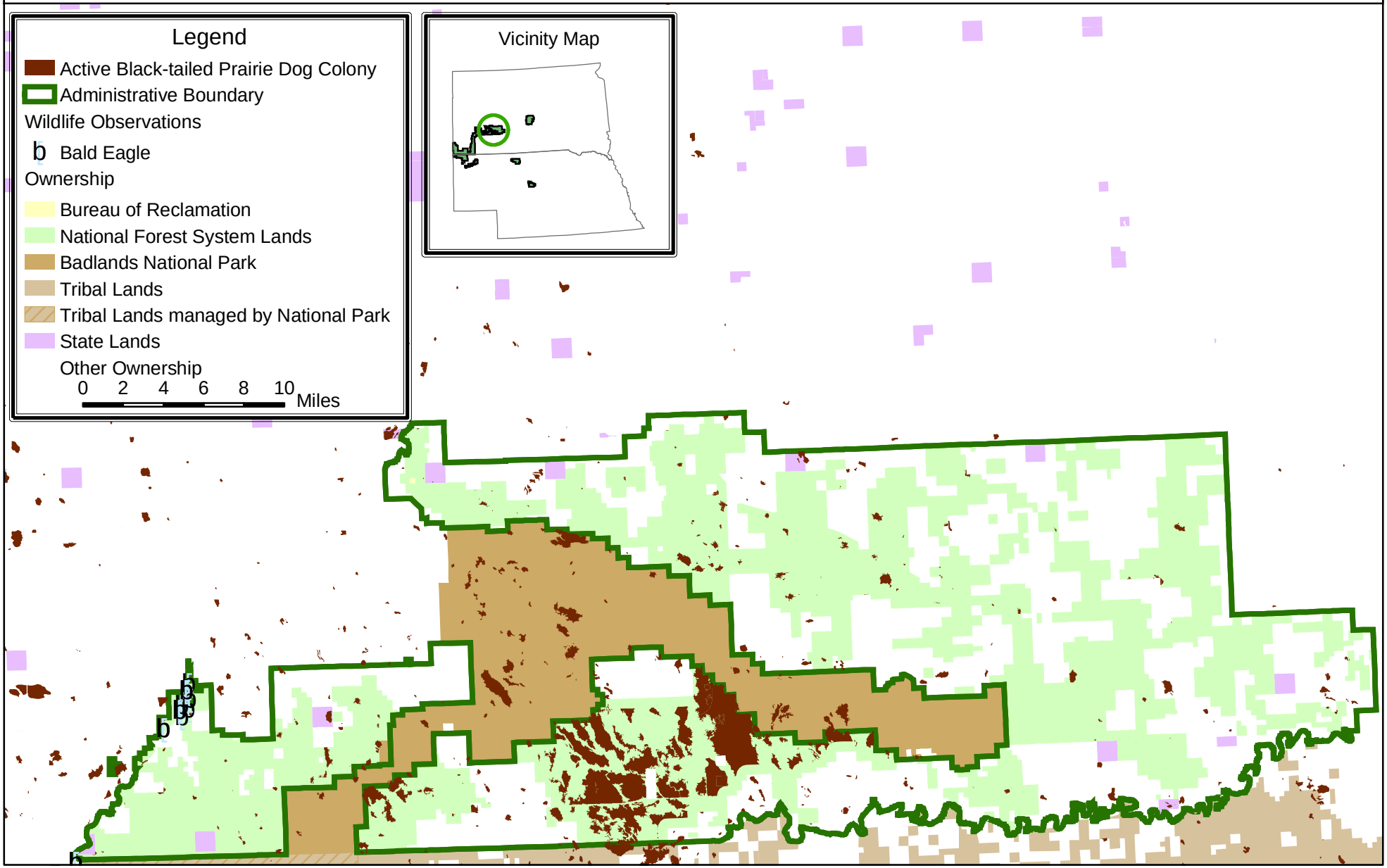
Map E-13

Bald Eagle Observations
Fort Pierre National Grassland

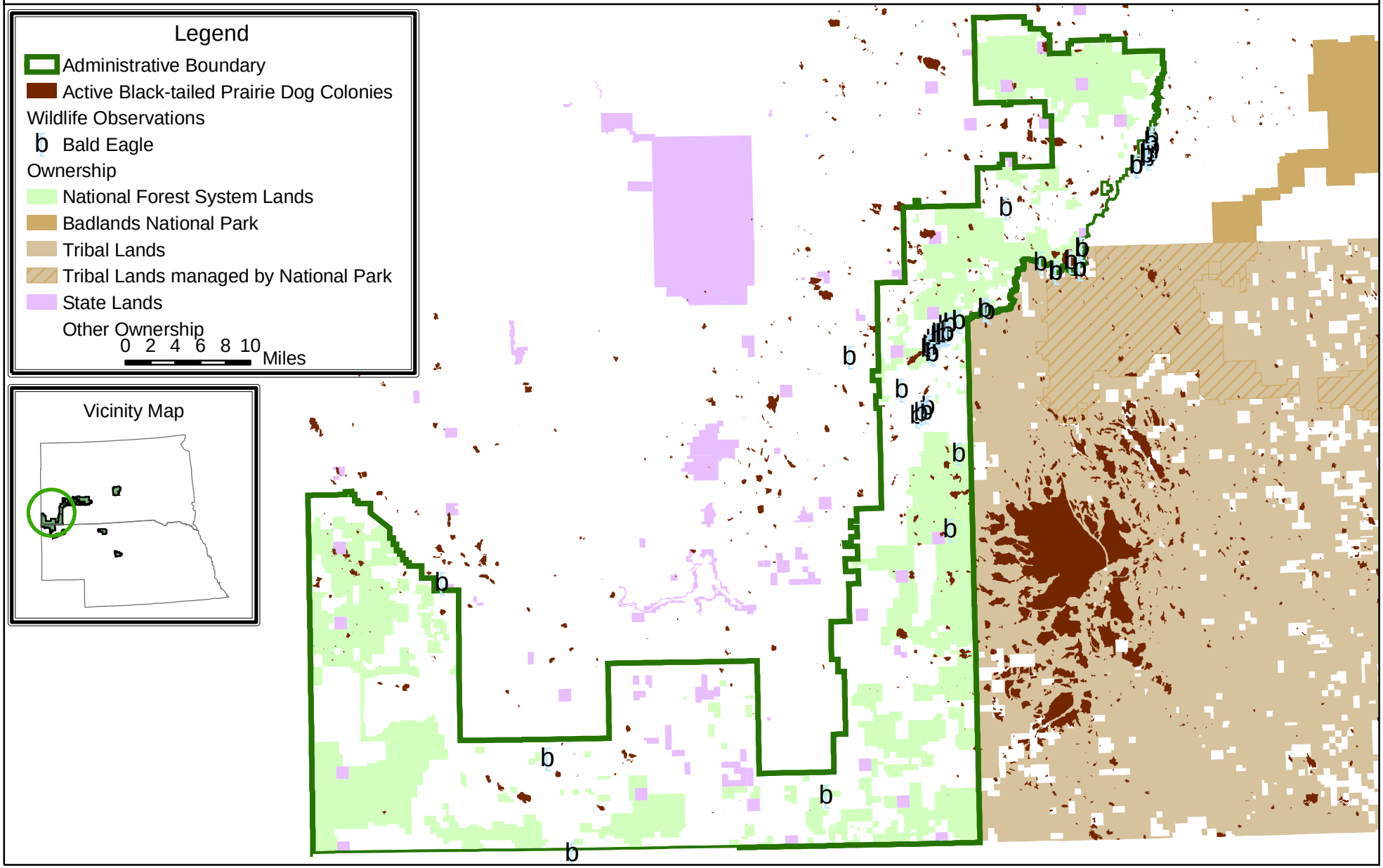


Map E-14

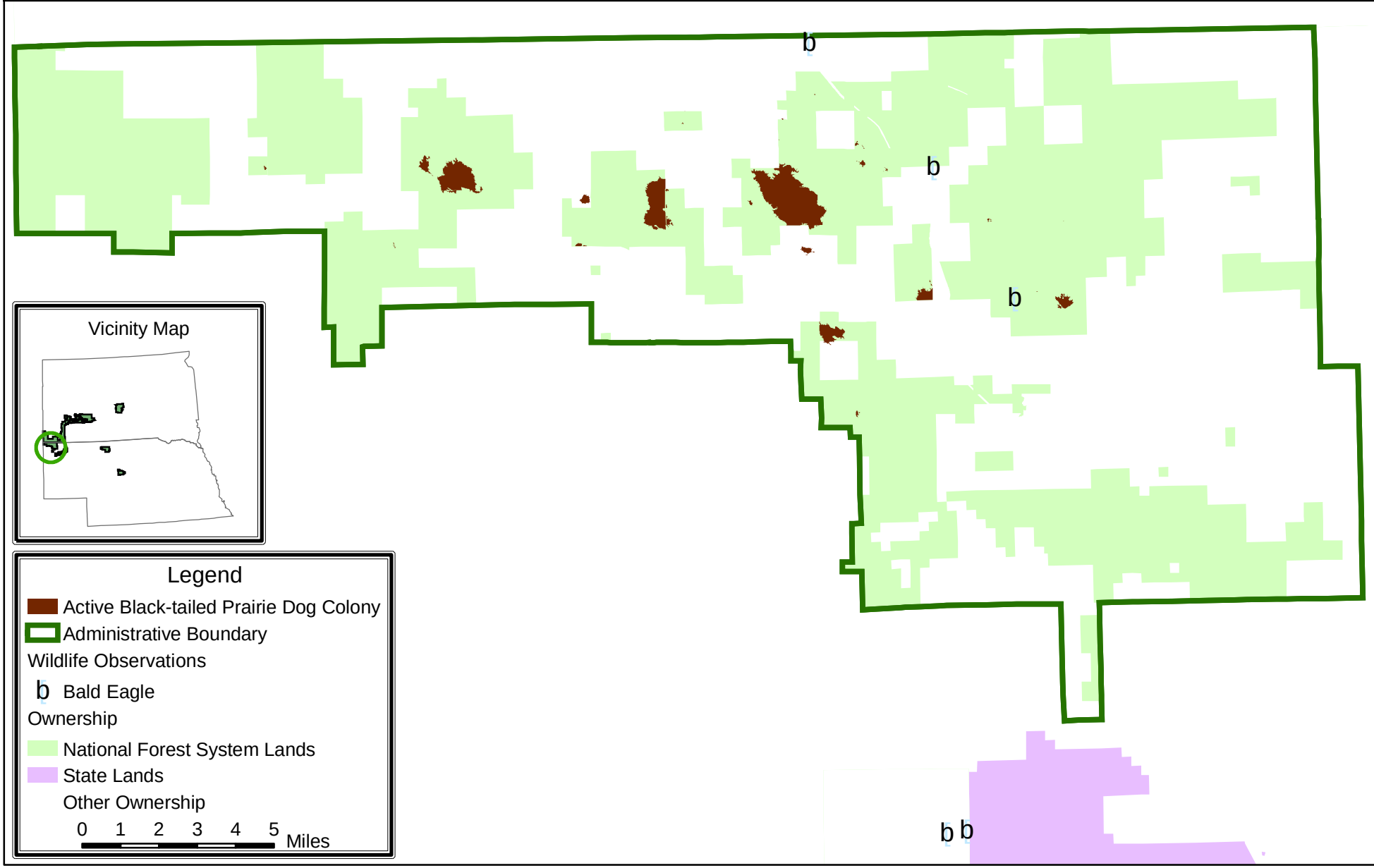
Bald Eagle Observations
East Half Buffalo Gap National Grassland



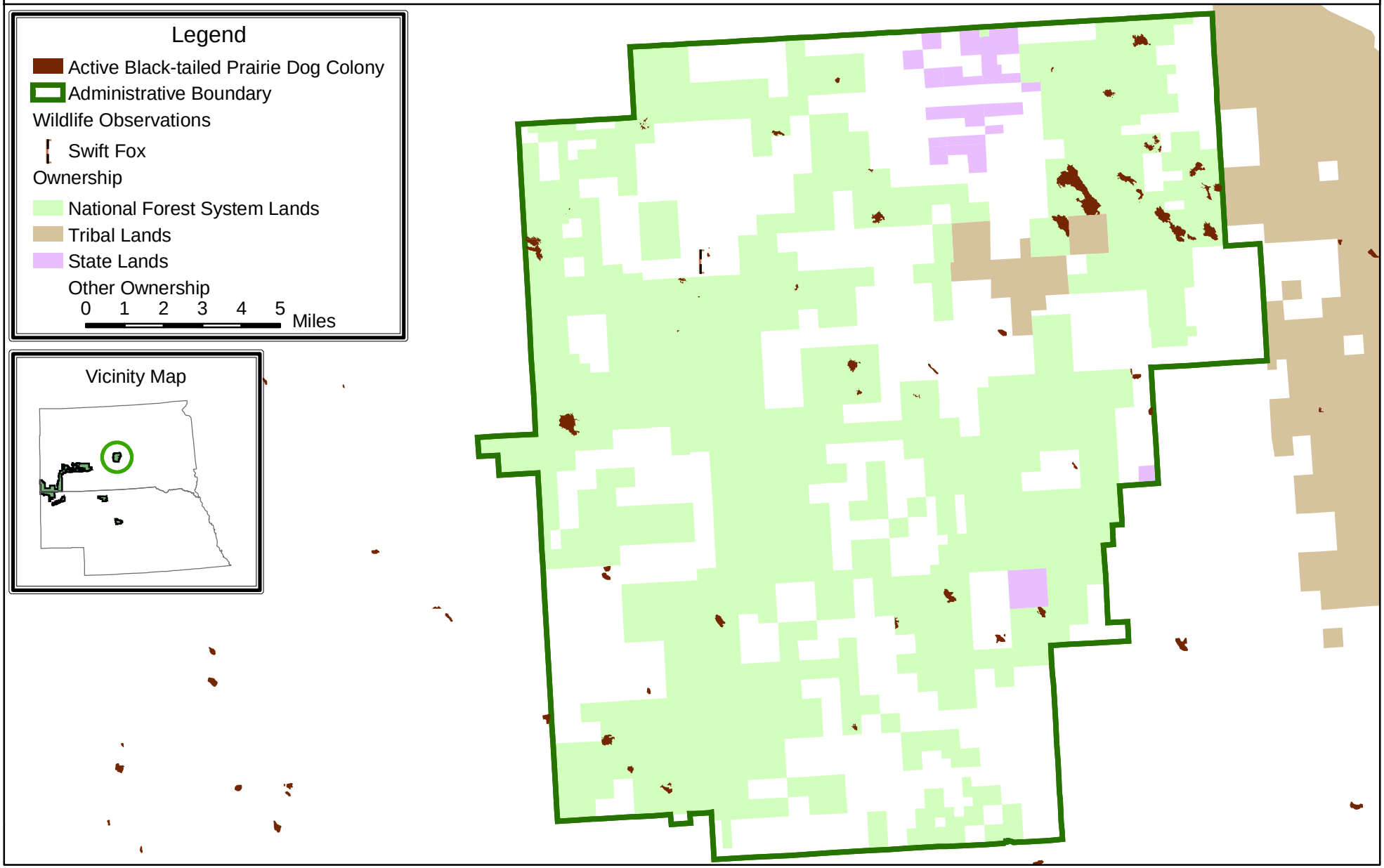
Bald Eagle Observations
West Half Buffalo Gap National Grassland



Bald Eagle Observations
Oglala National Grassland

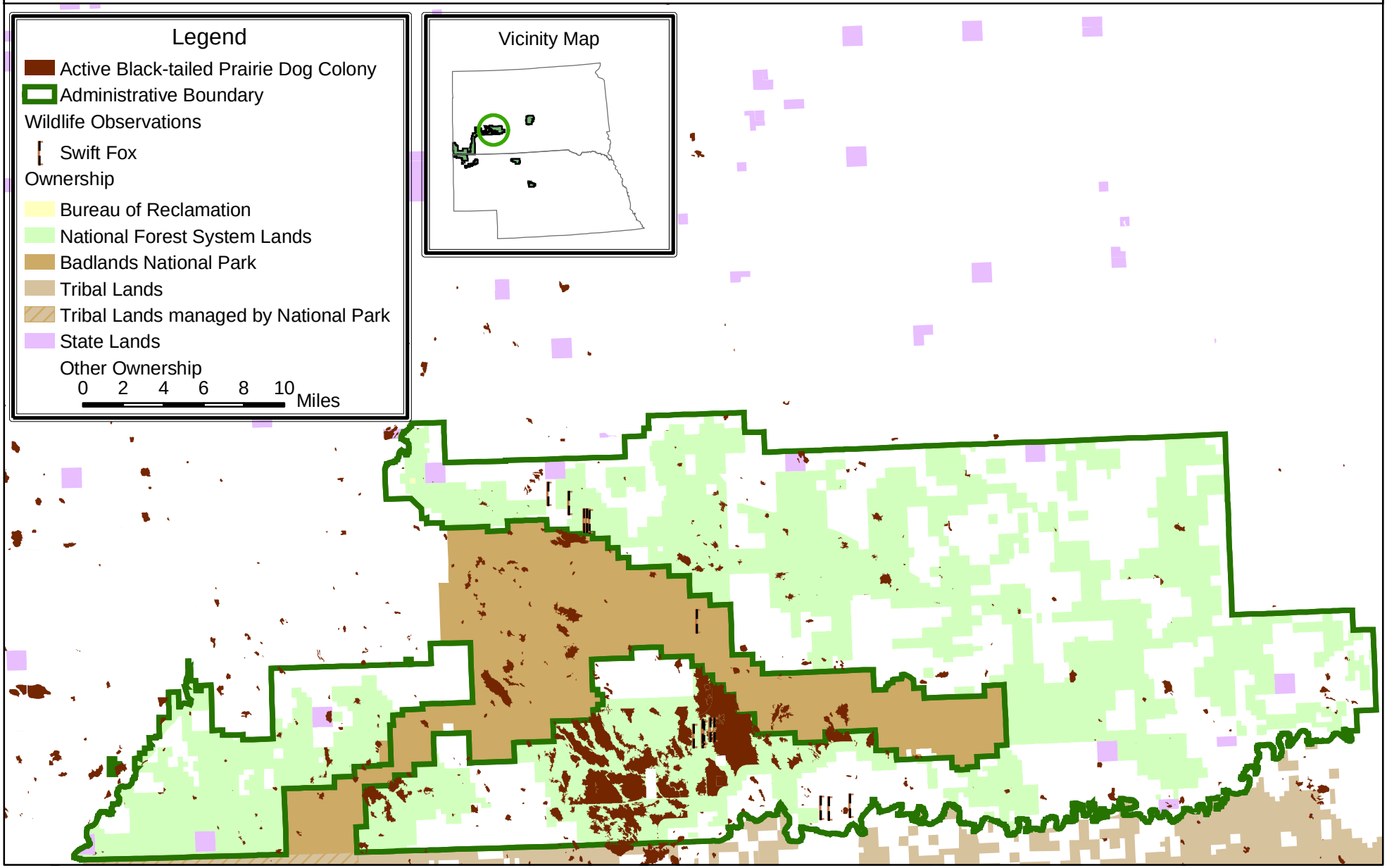


Swift Fox Observations
Fort Pierre National Grassland

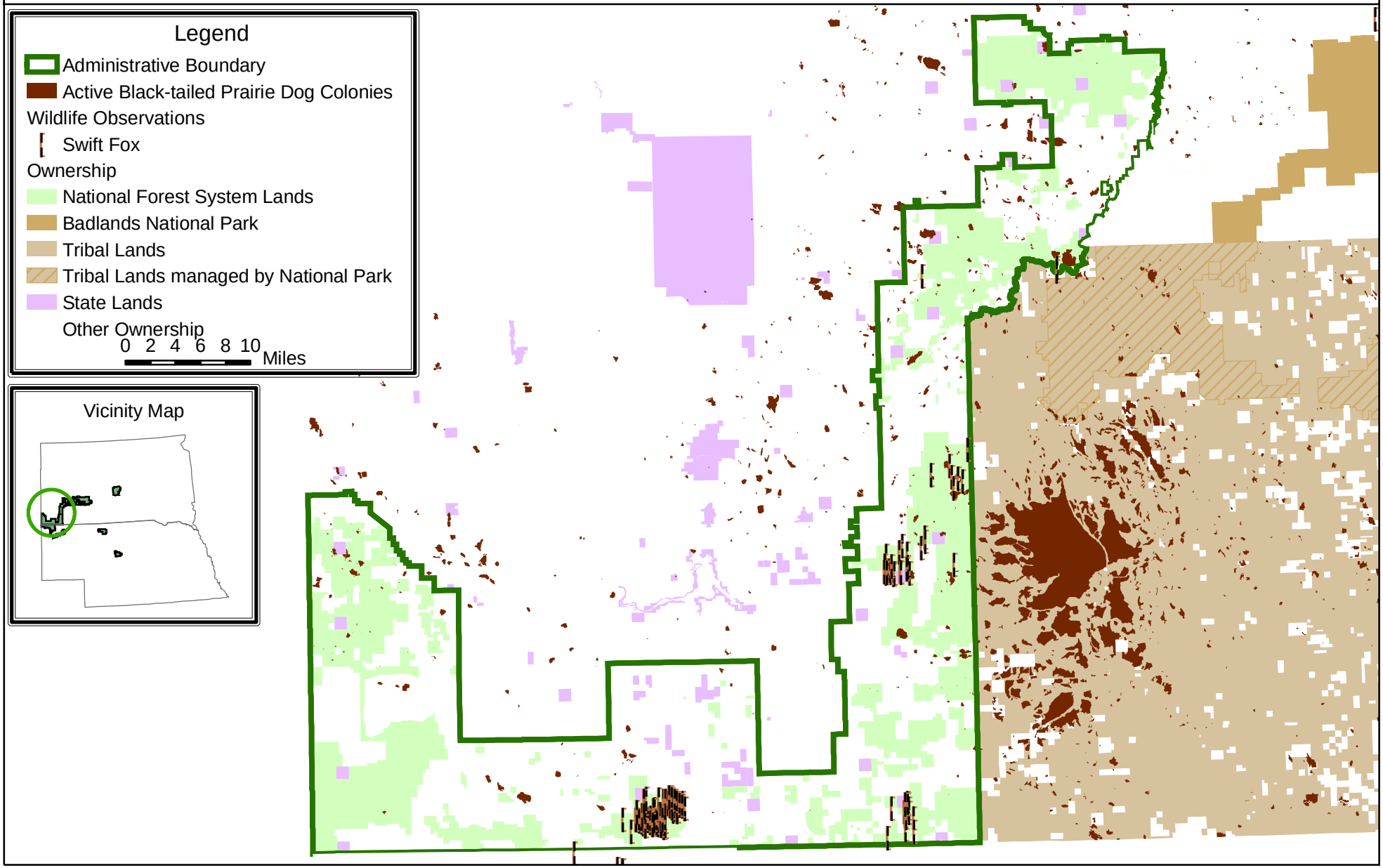


Map E-18

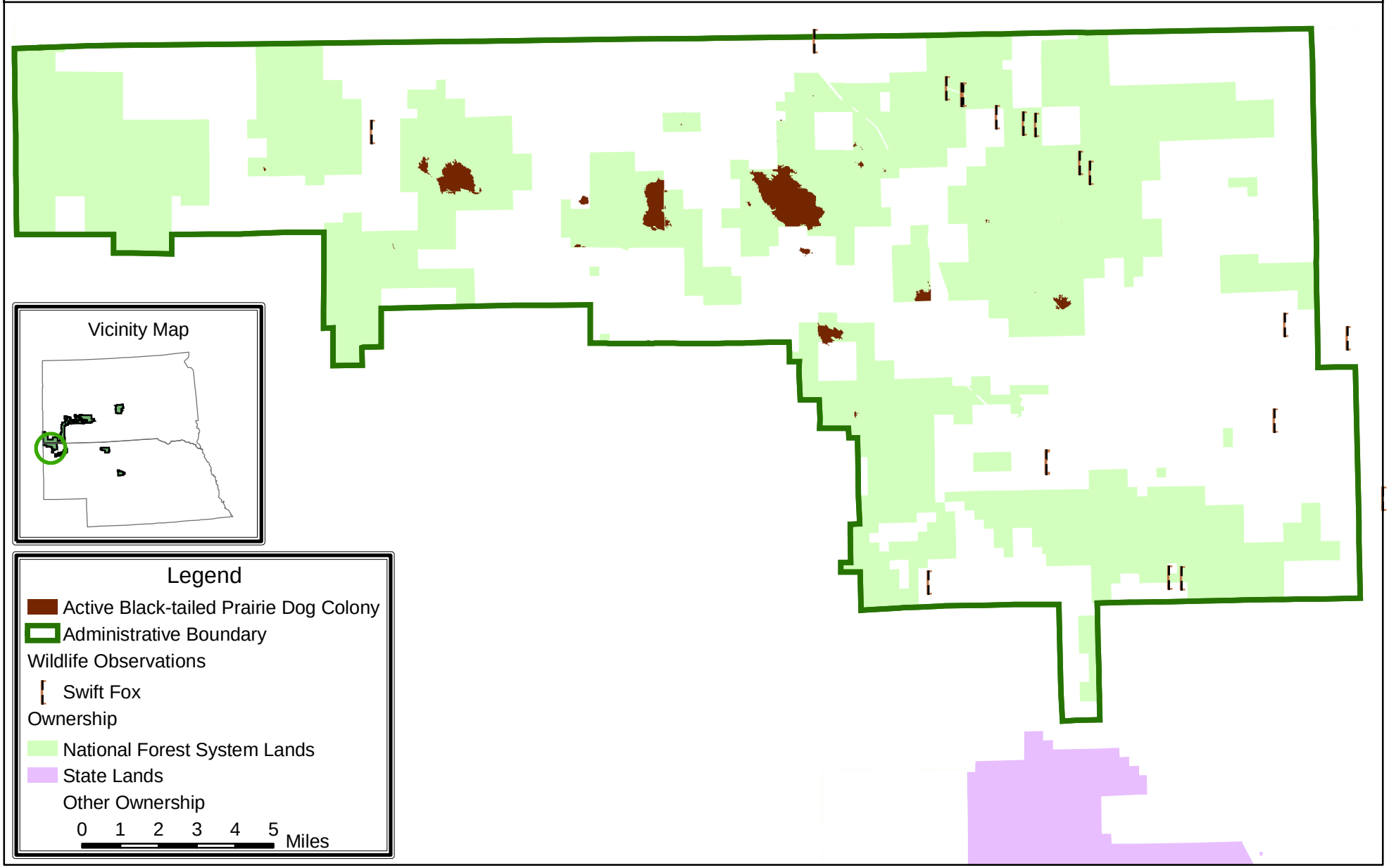
Swift Fox Observations
East Half Buffalo Gap National Grassland



Swift Fox Observations
West Half Buffalo Gap National Grassland

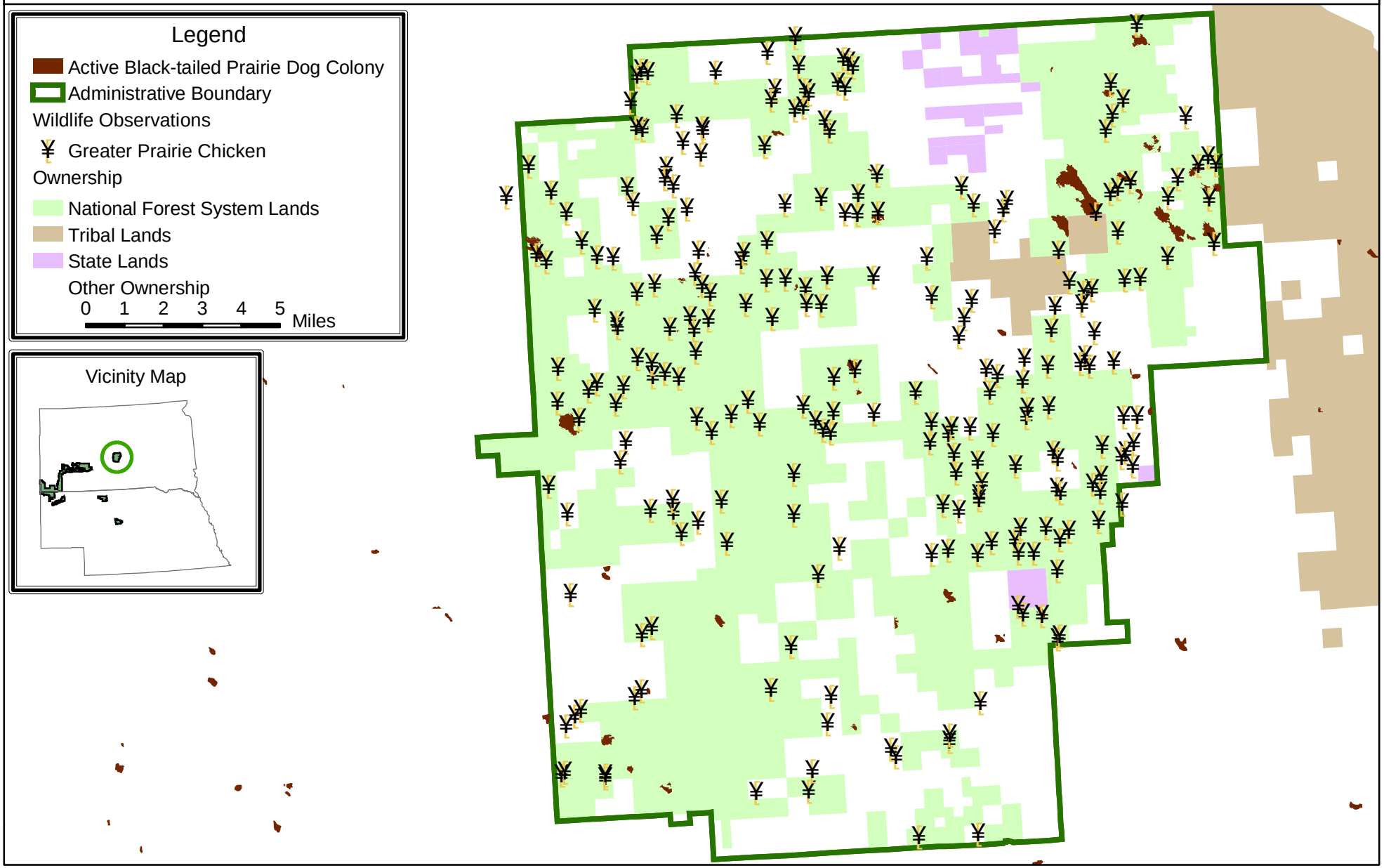


Swift Fox Observations
Oglala National Grassland

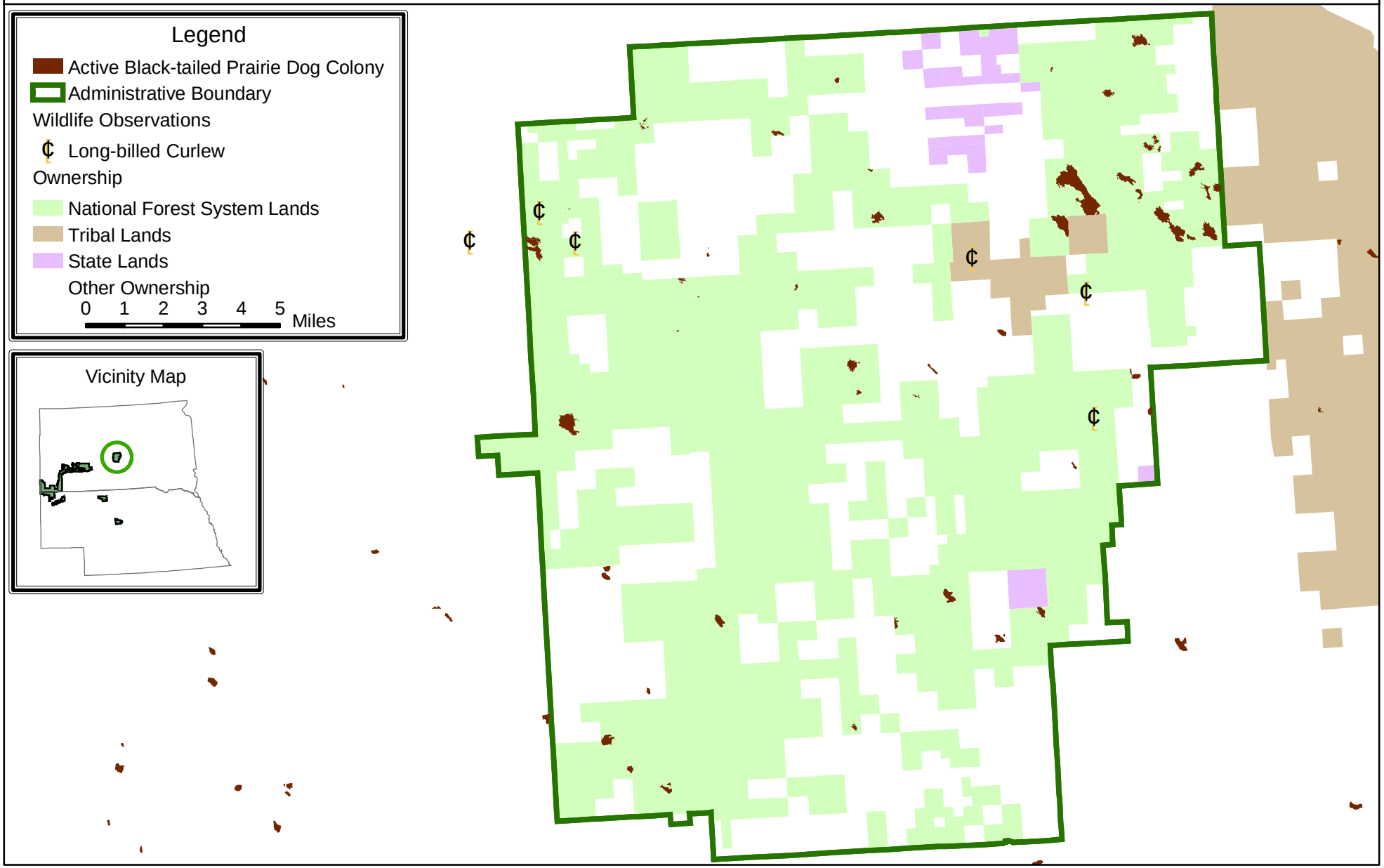


Map E-21

Greater Prairie Chicken Observations
Fort Pierre National Grassland

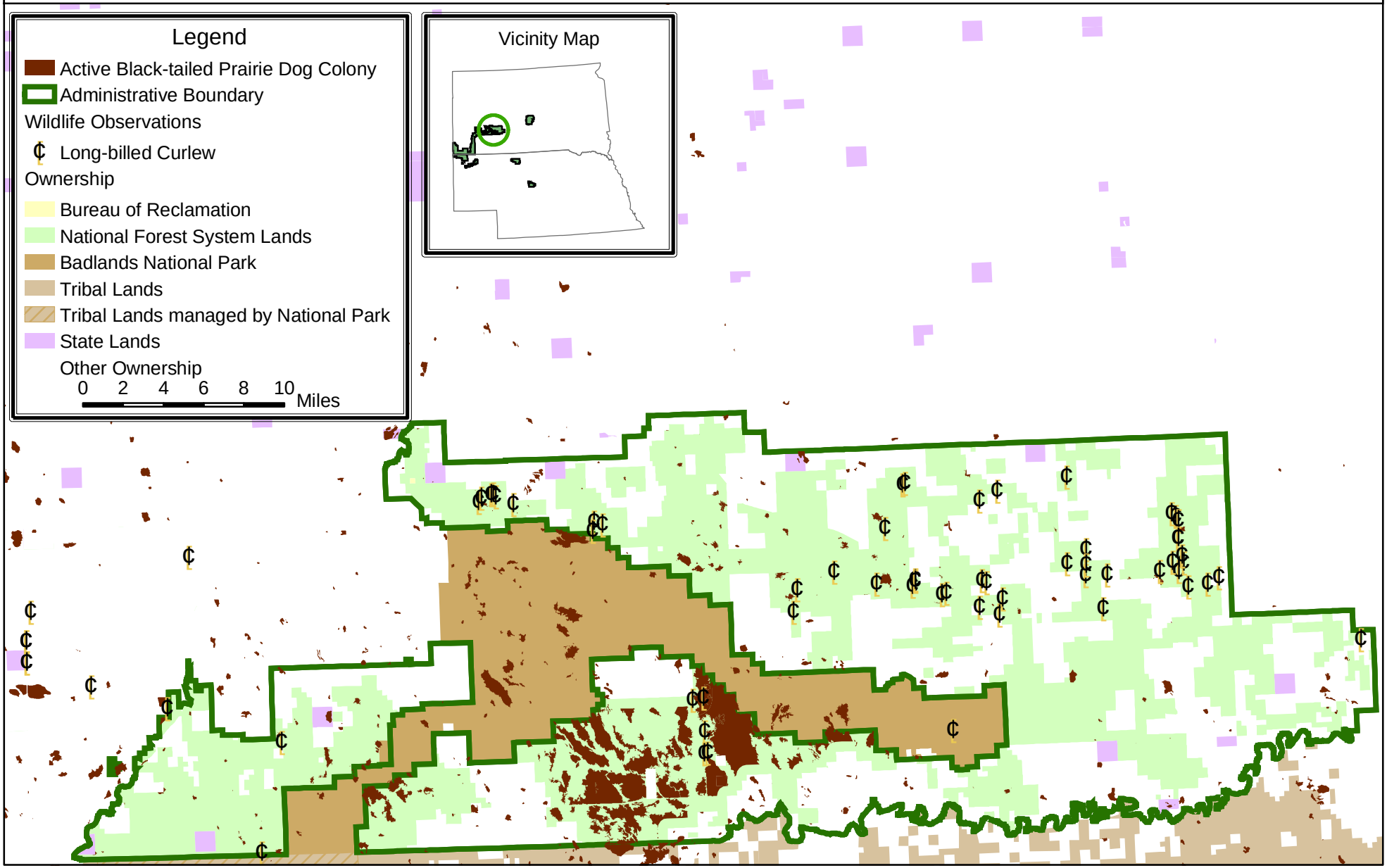


Long-Billed Curlew Observations
Fort Pierre National Grassland

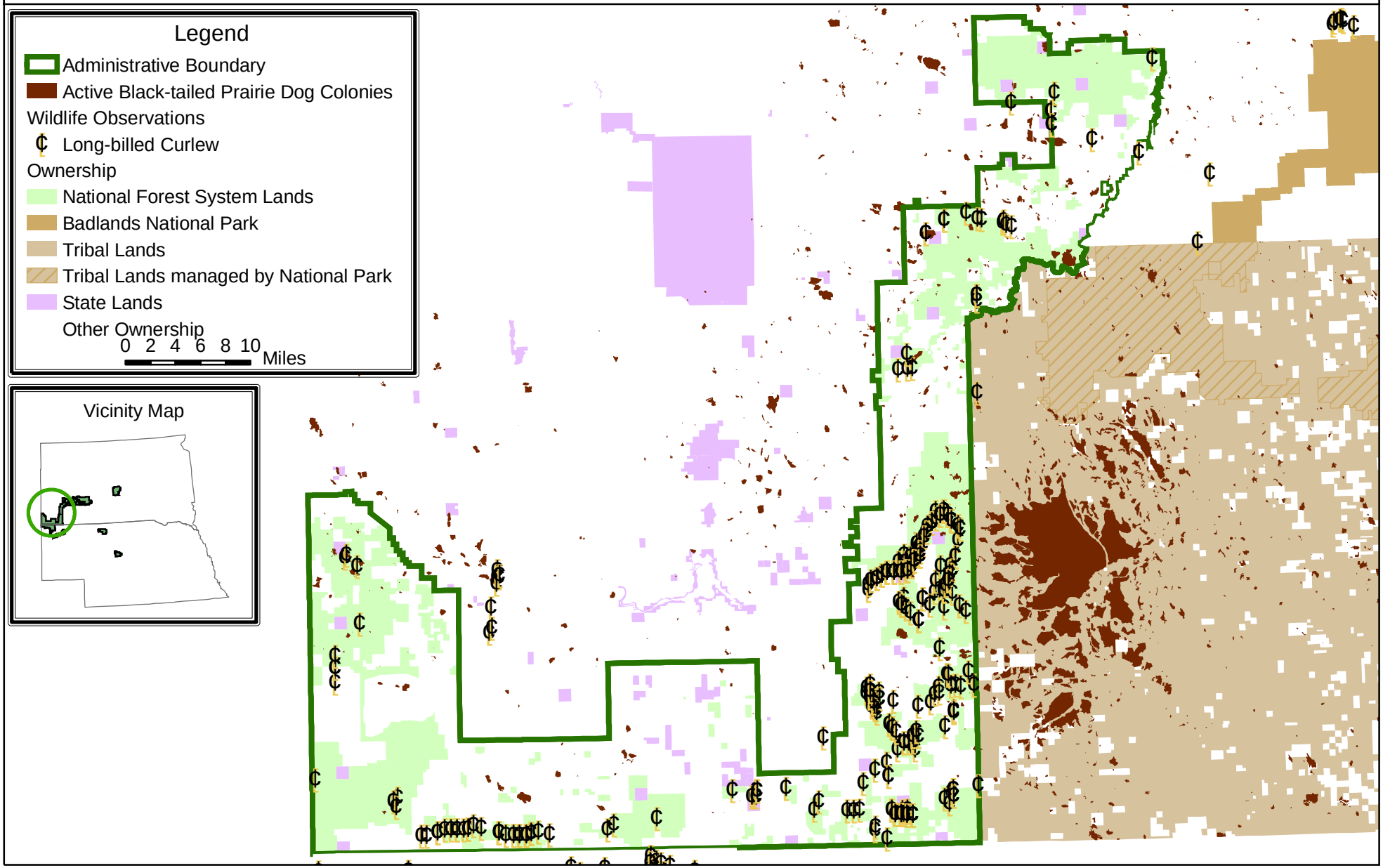


Map E-23

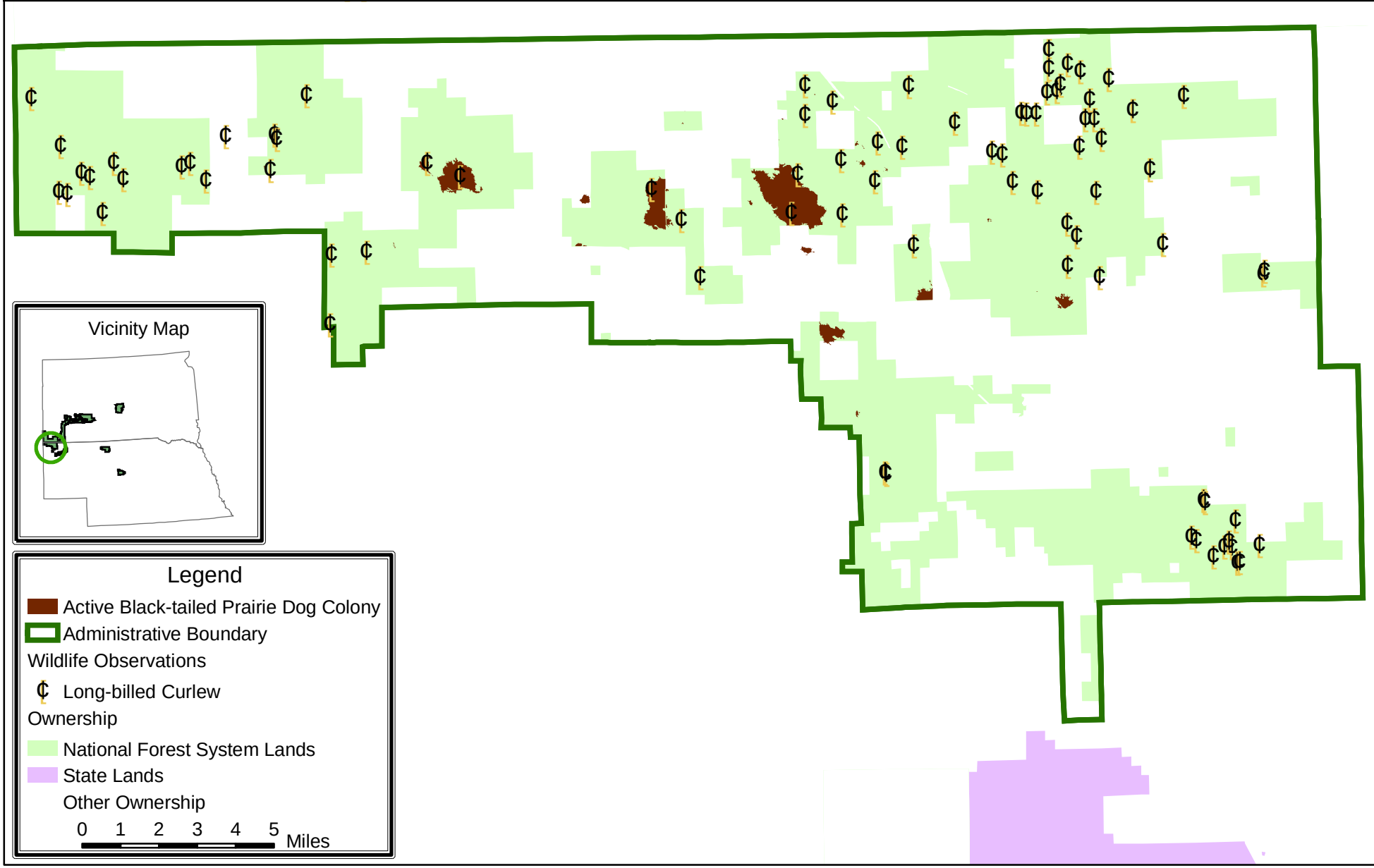
Long-Billed Curlew Observations
East Half Buffalo Gap National Grassland



Long-Billed Curlew Observations
West Half Buffalo Gap National Grassland

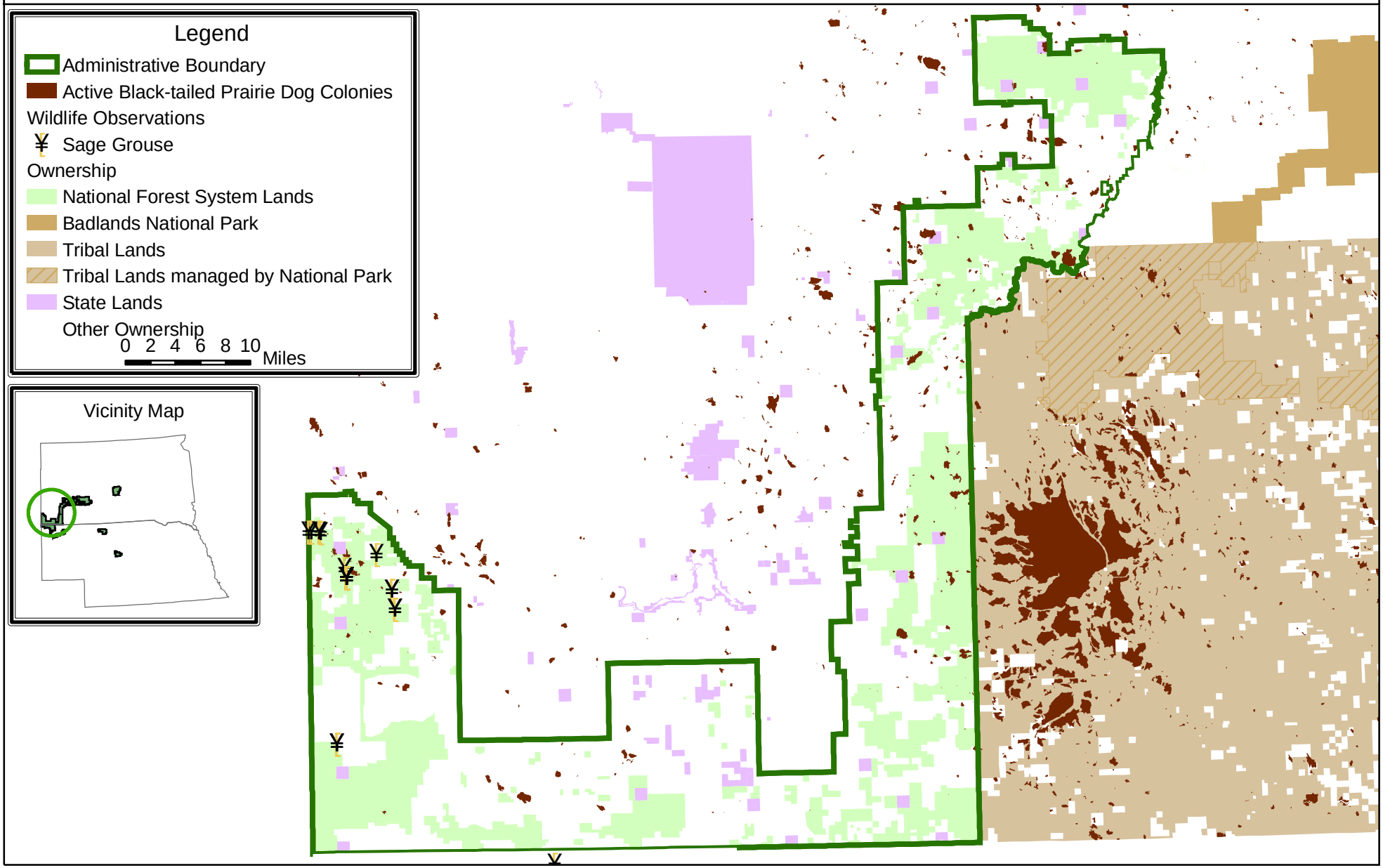


Long-Billed Curlew Observations
Oglala National Grassland

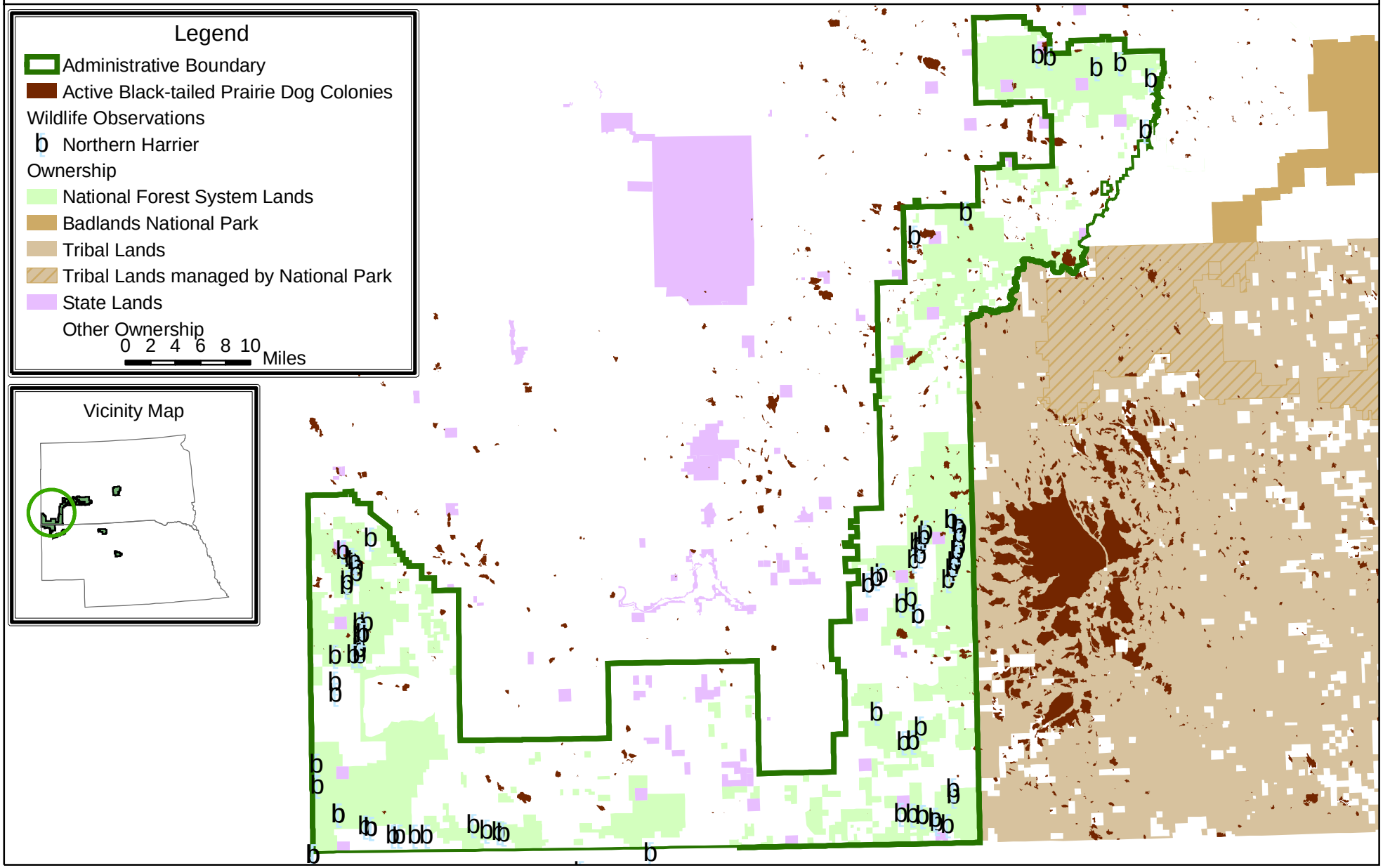


Map E-26

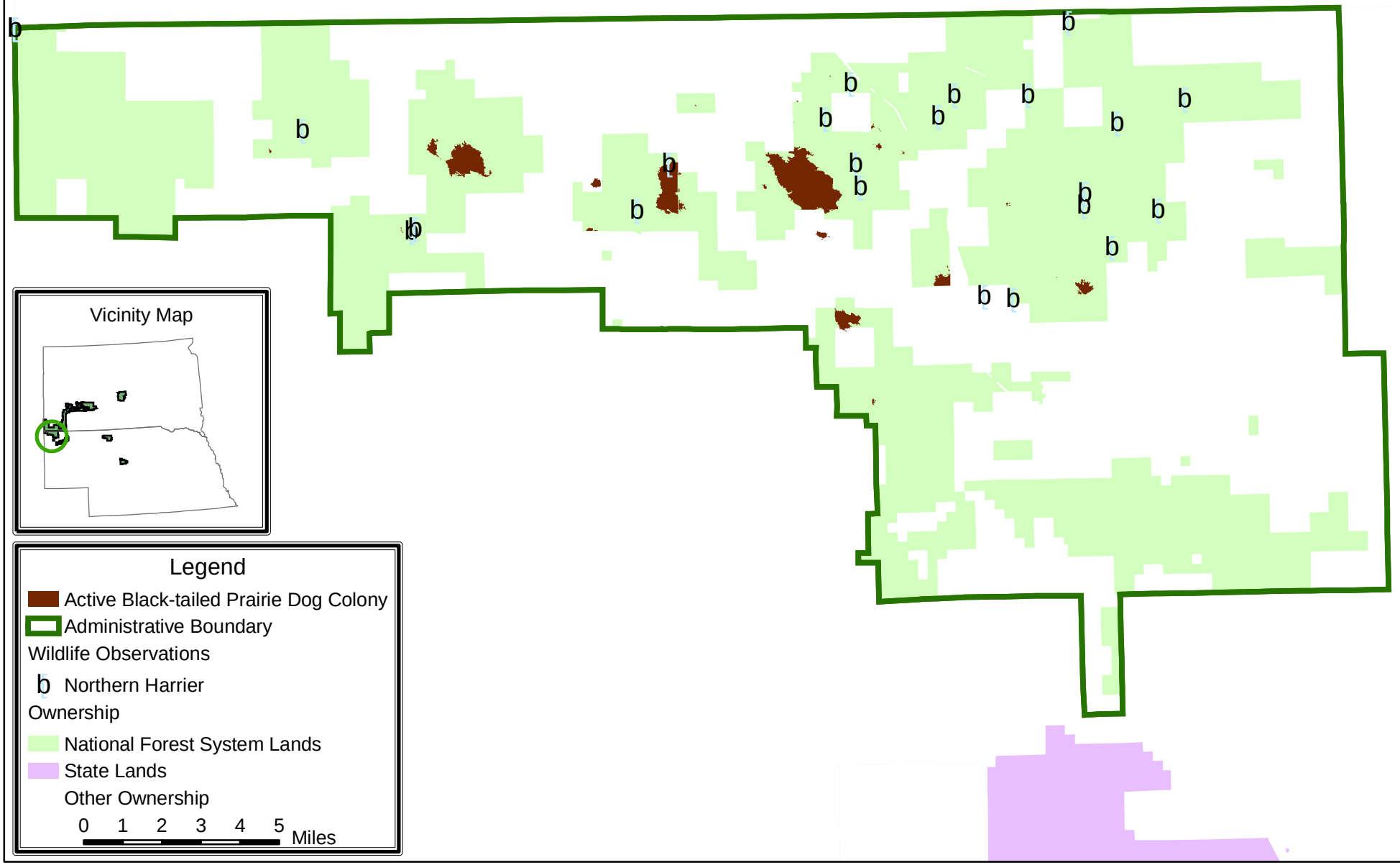
Greater Sage Grouse Observations
West Half Buffalo Gap National Grassland



Northern Harrier Observations
West Half Buffalo Gap National Grassland

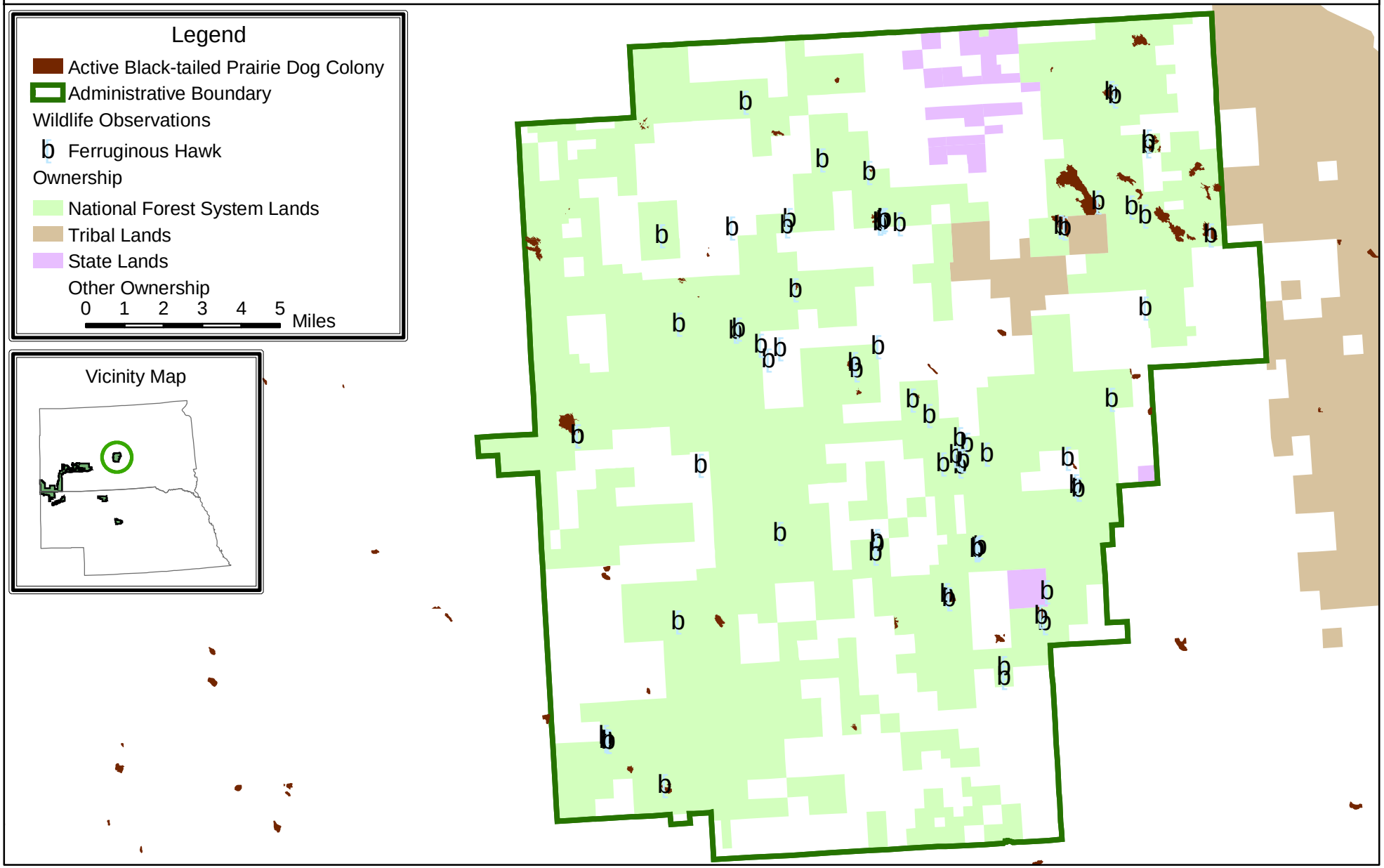


Northern Harrier Observations
Oglala National Grassland



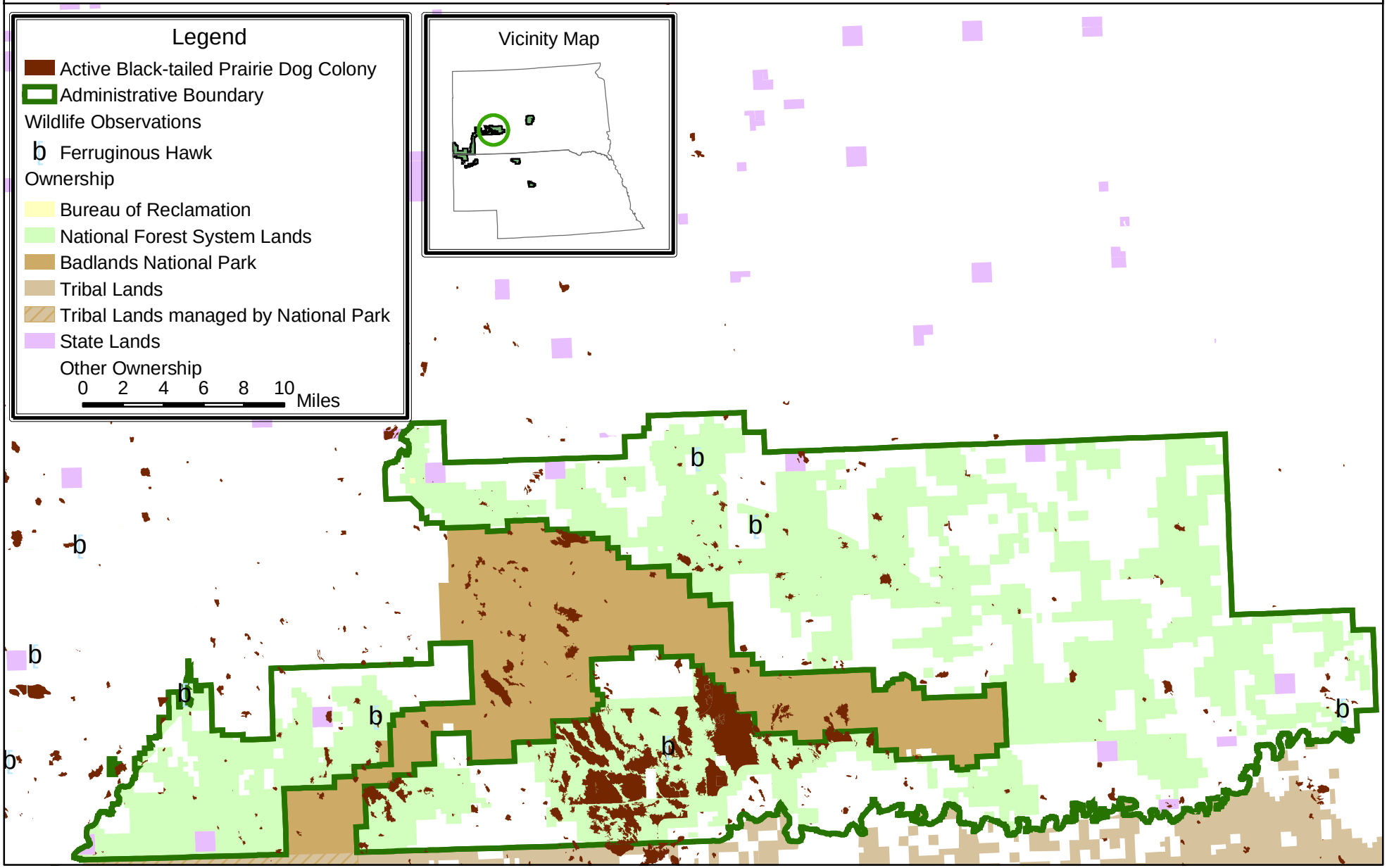
Map E-29

Ferruginous Hawk Observations
Fort Pierre National Grassland



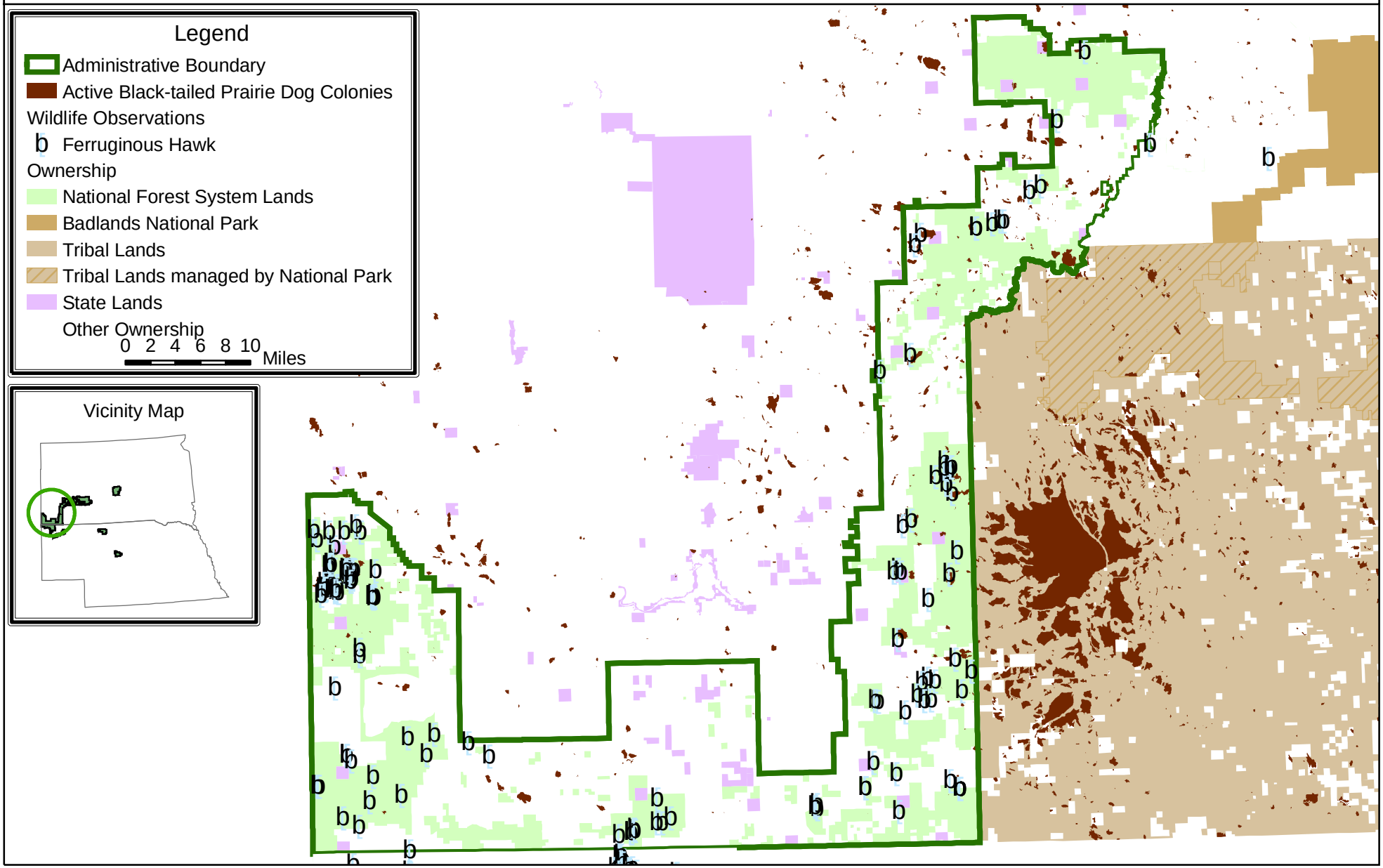
Map E-30

Ferruginous Hawk Observations
East Half Buffalo Gap National Grassland

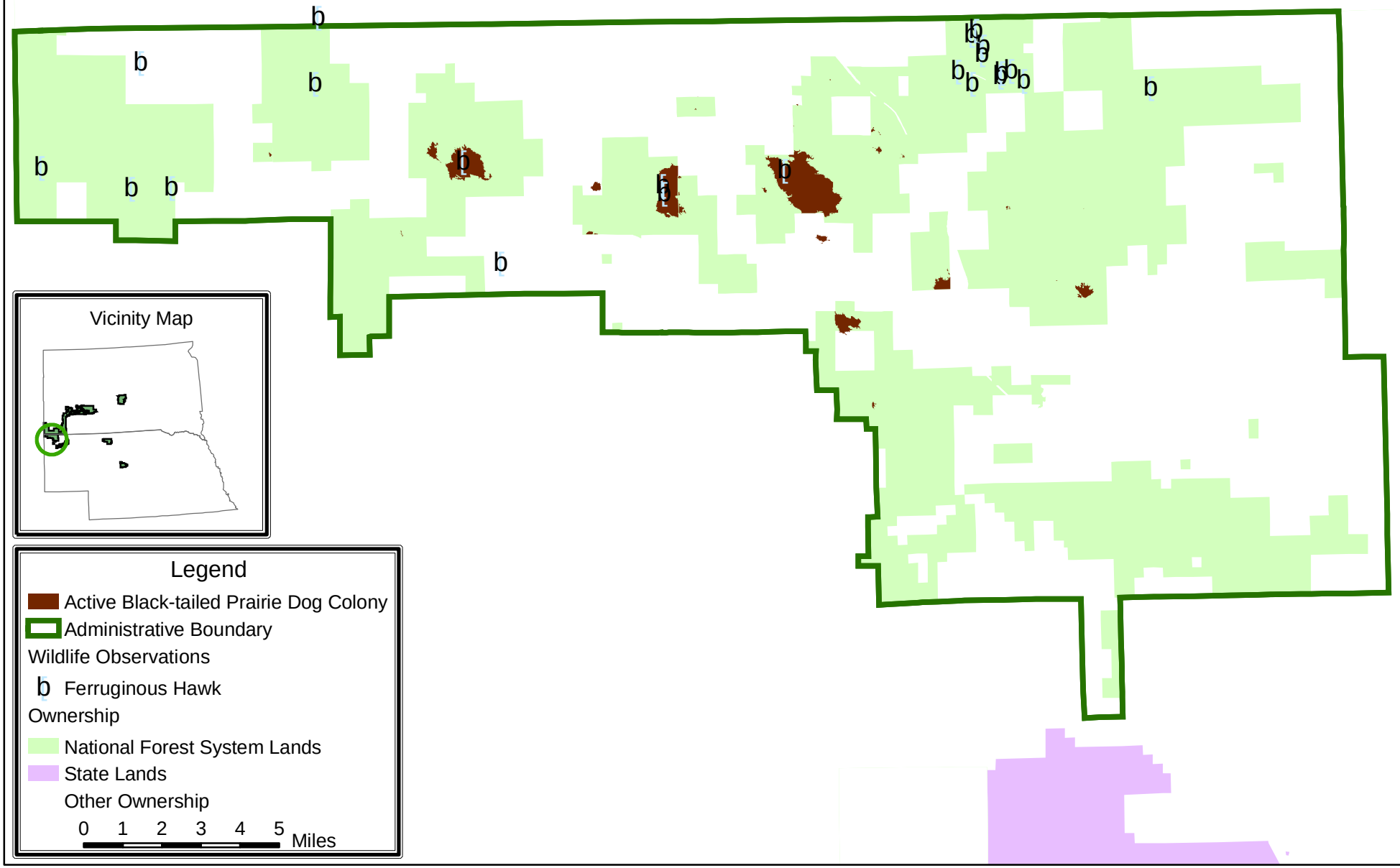


Map E-31

Ferruginous Hawk Observations
West Half Buffalo Gap National Grassland

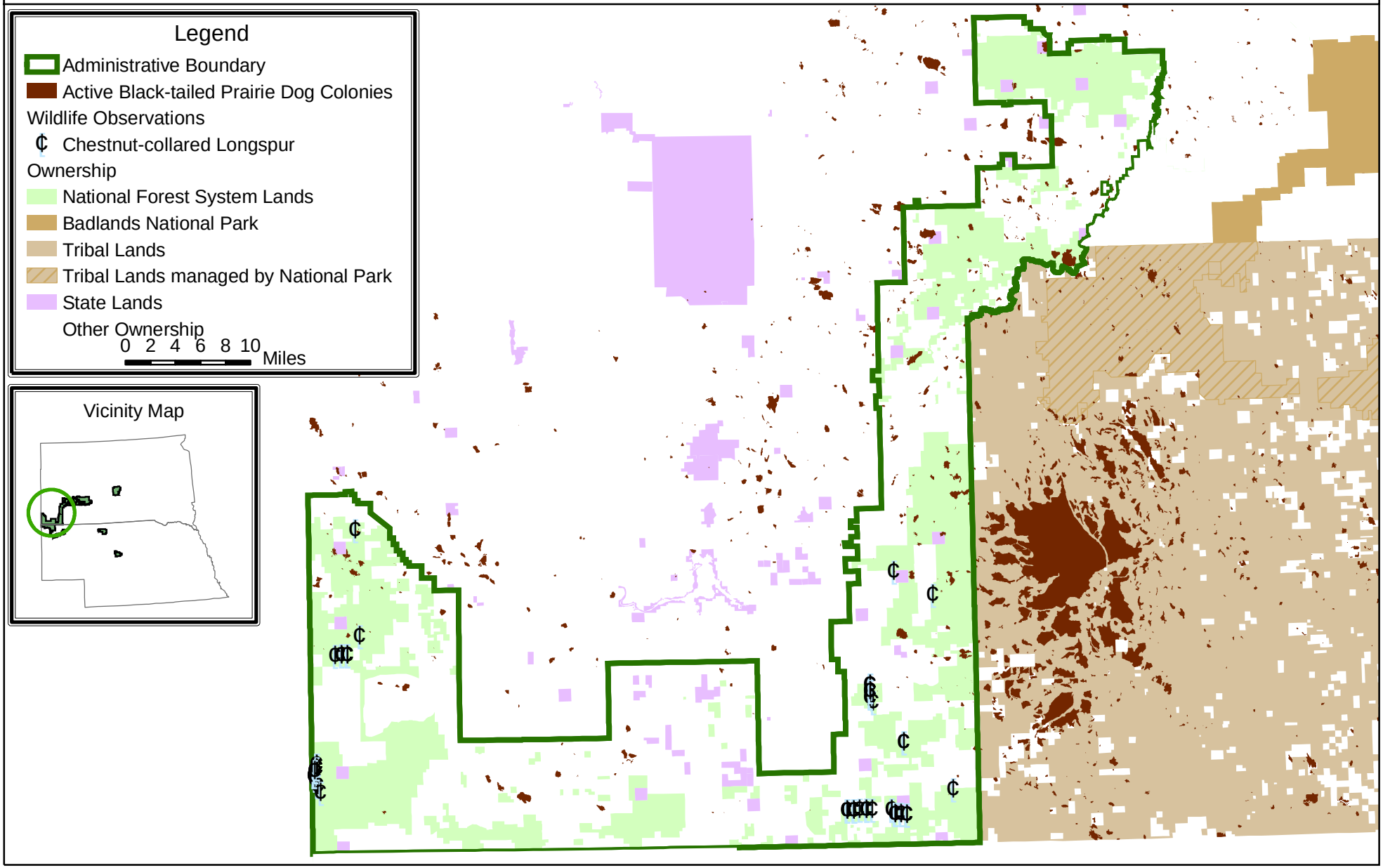


Ferruginous Hawk Observations
Oglala National Grassland

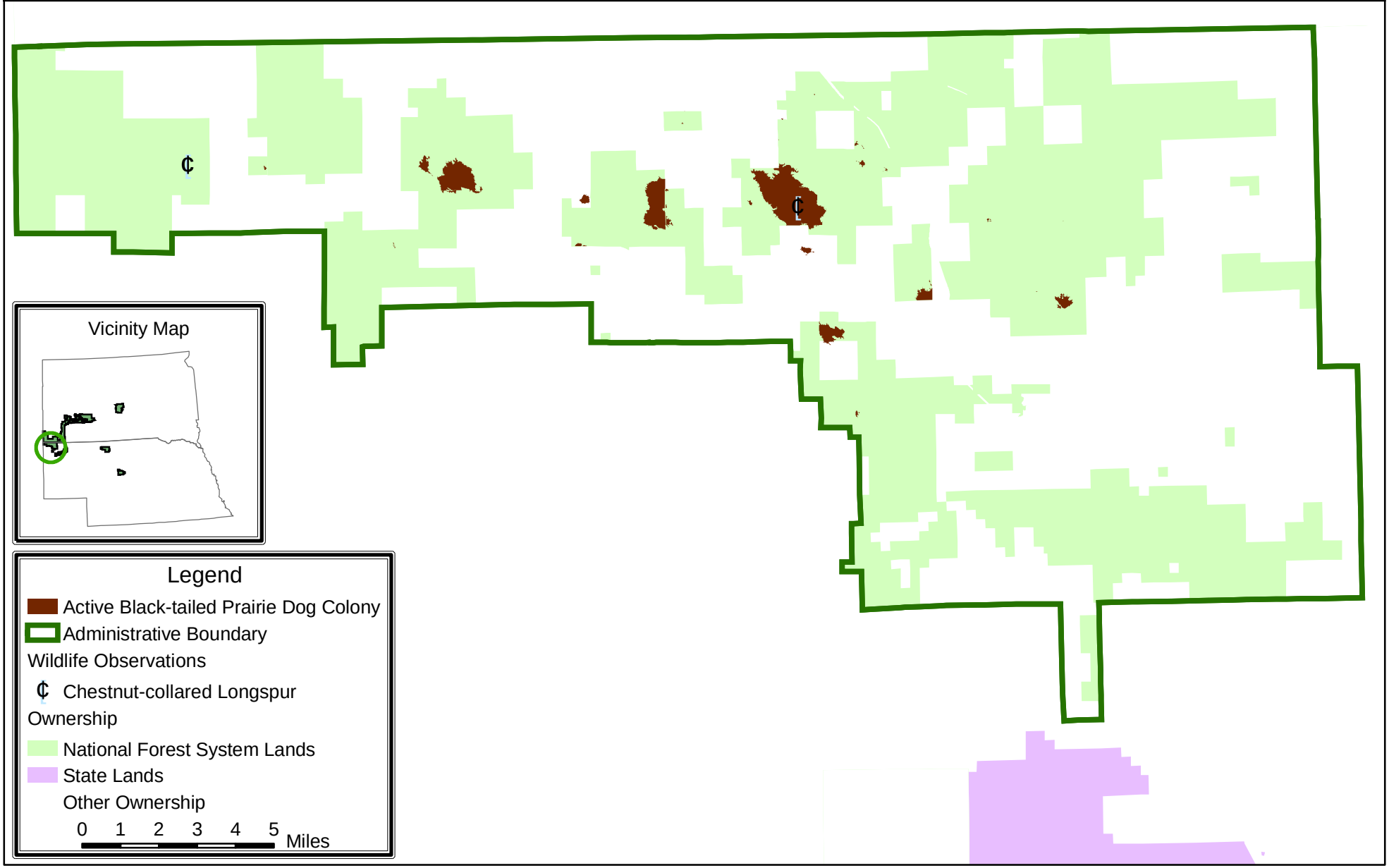


Map E-33

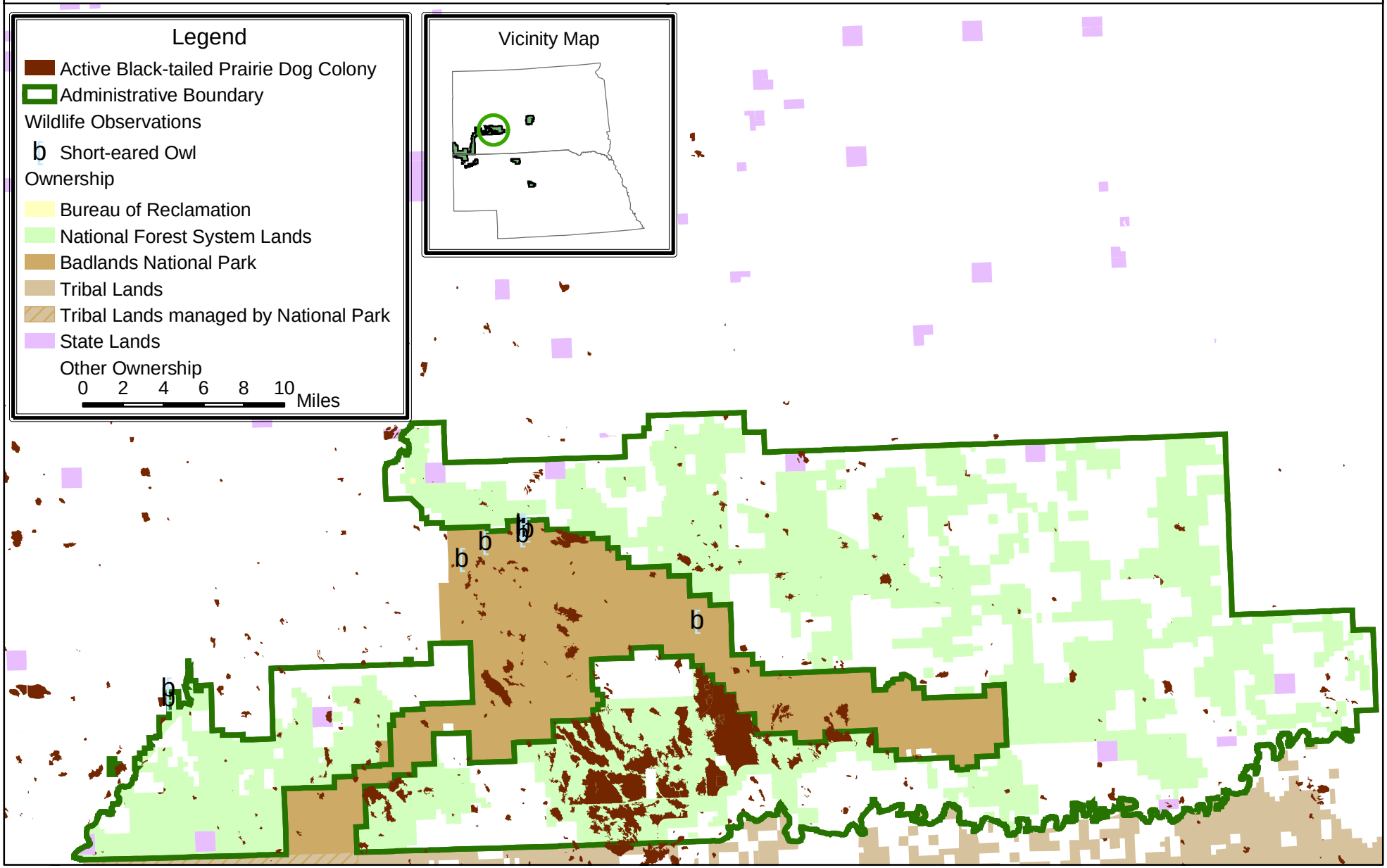
Chestnut Collared Longspur Observations
West Half Buffalo Gap National Grassland



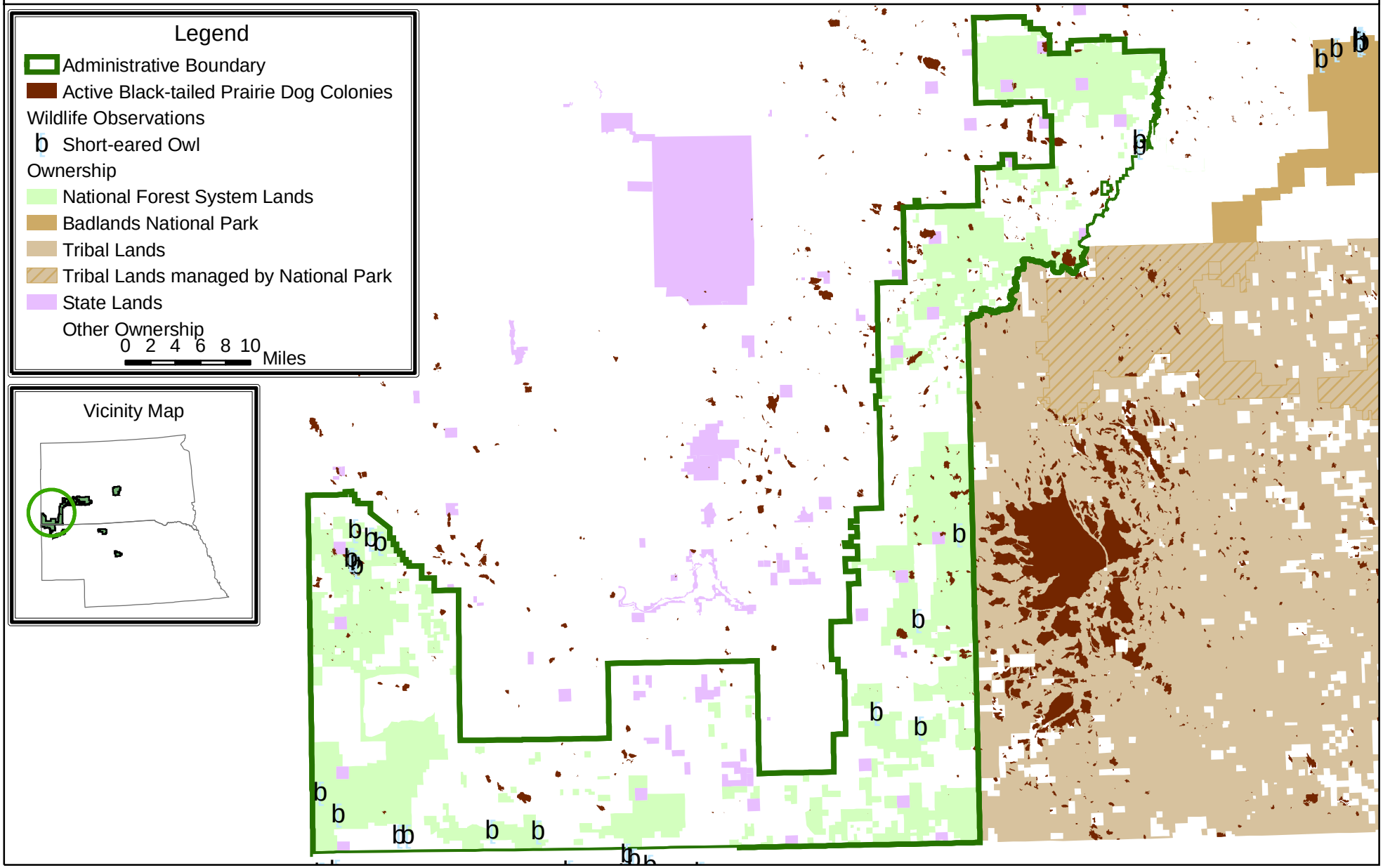
Chestnut Collared Longspur Observations
Oglala National Grassland



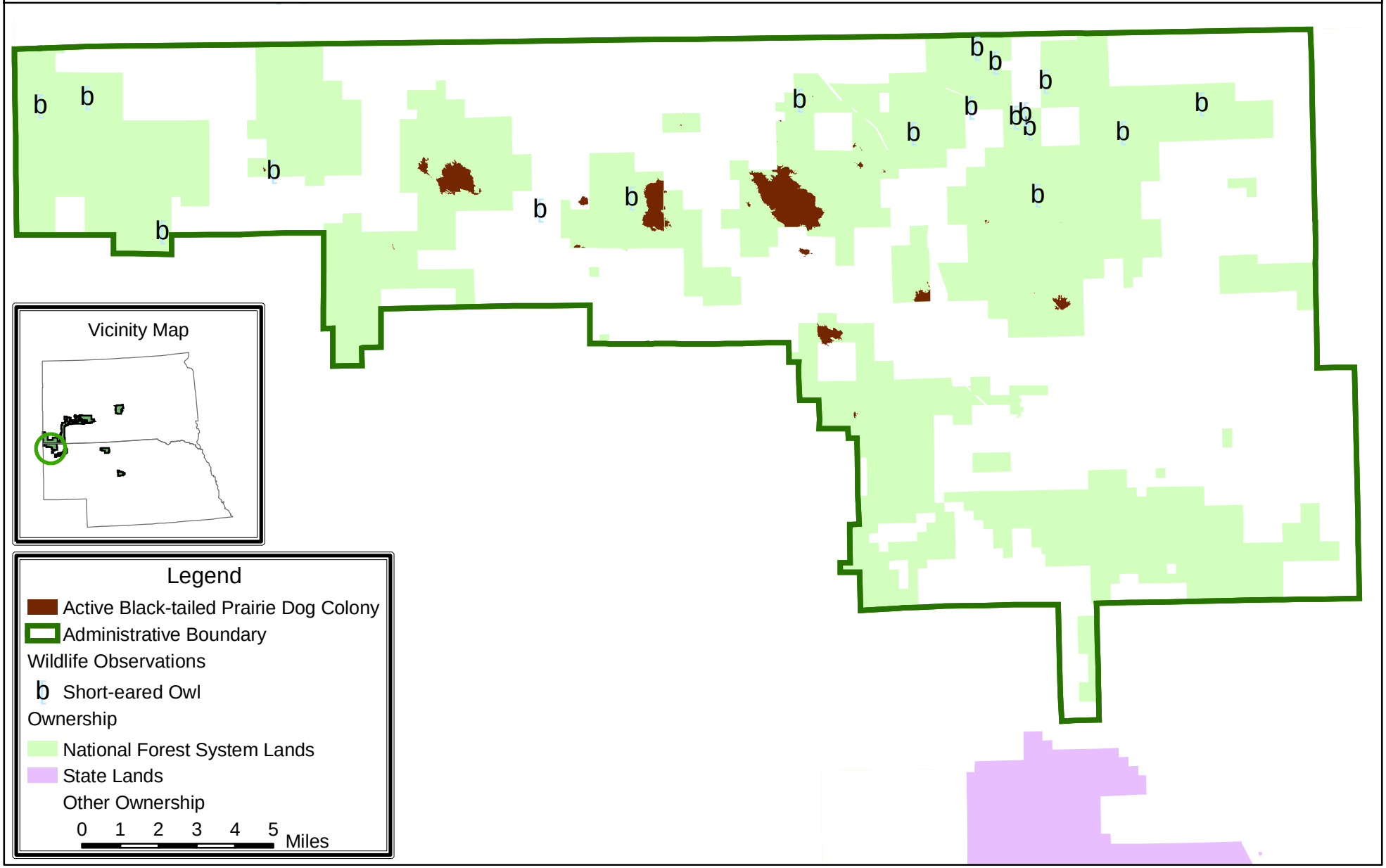
Short-Eared Owl Observations
East Half Buffalo Gap National Grassland



Short-Eared Owl Observations
West Half Buffalo Gap National Grassland

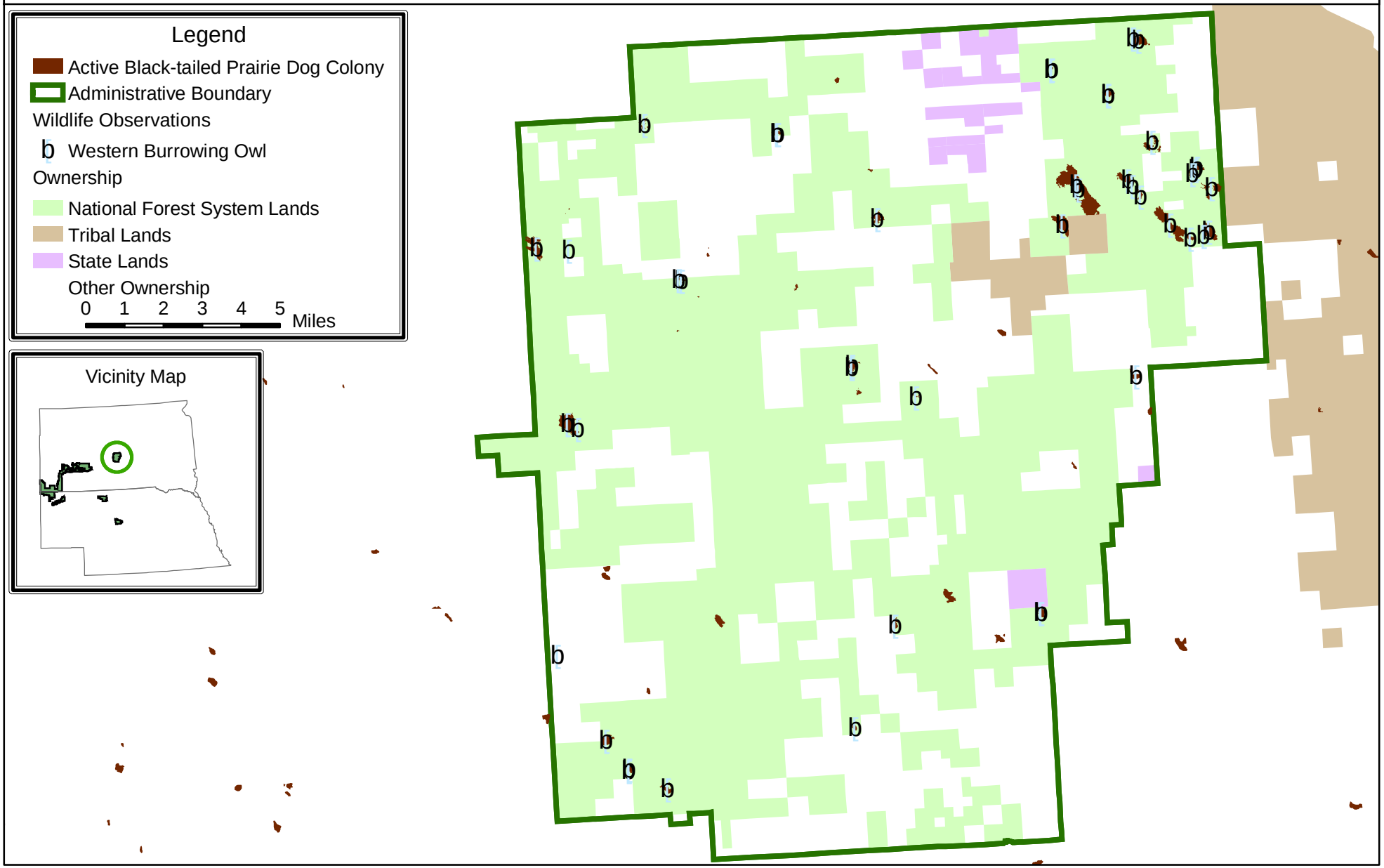


Short-Eared Owl Observations
Oglala National Grassland



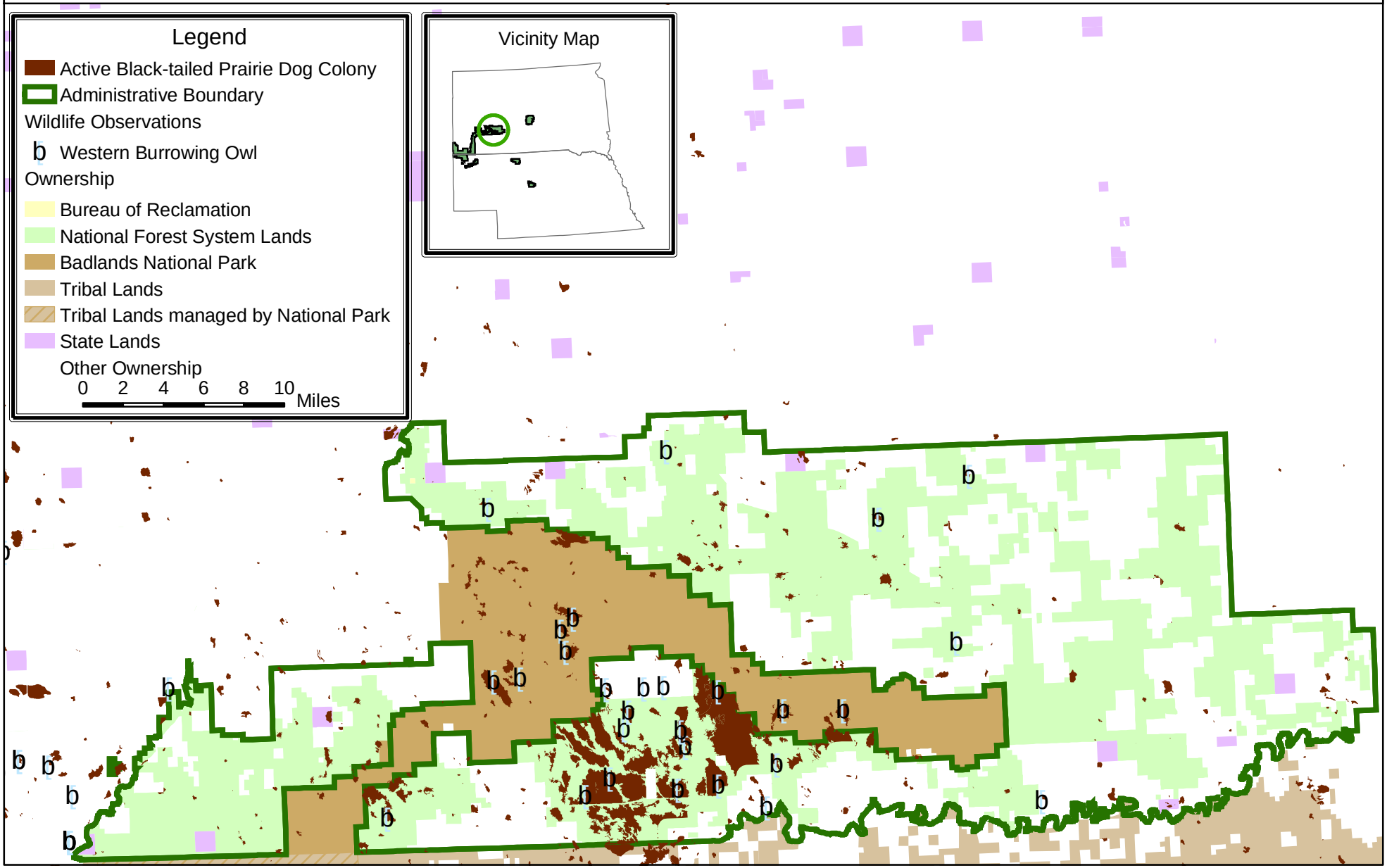
Map E-38

Western Burrowing Owl Observations
Fort Pierre National Grassland

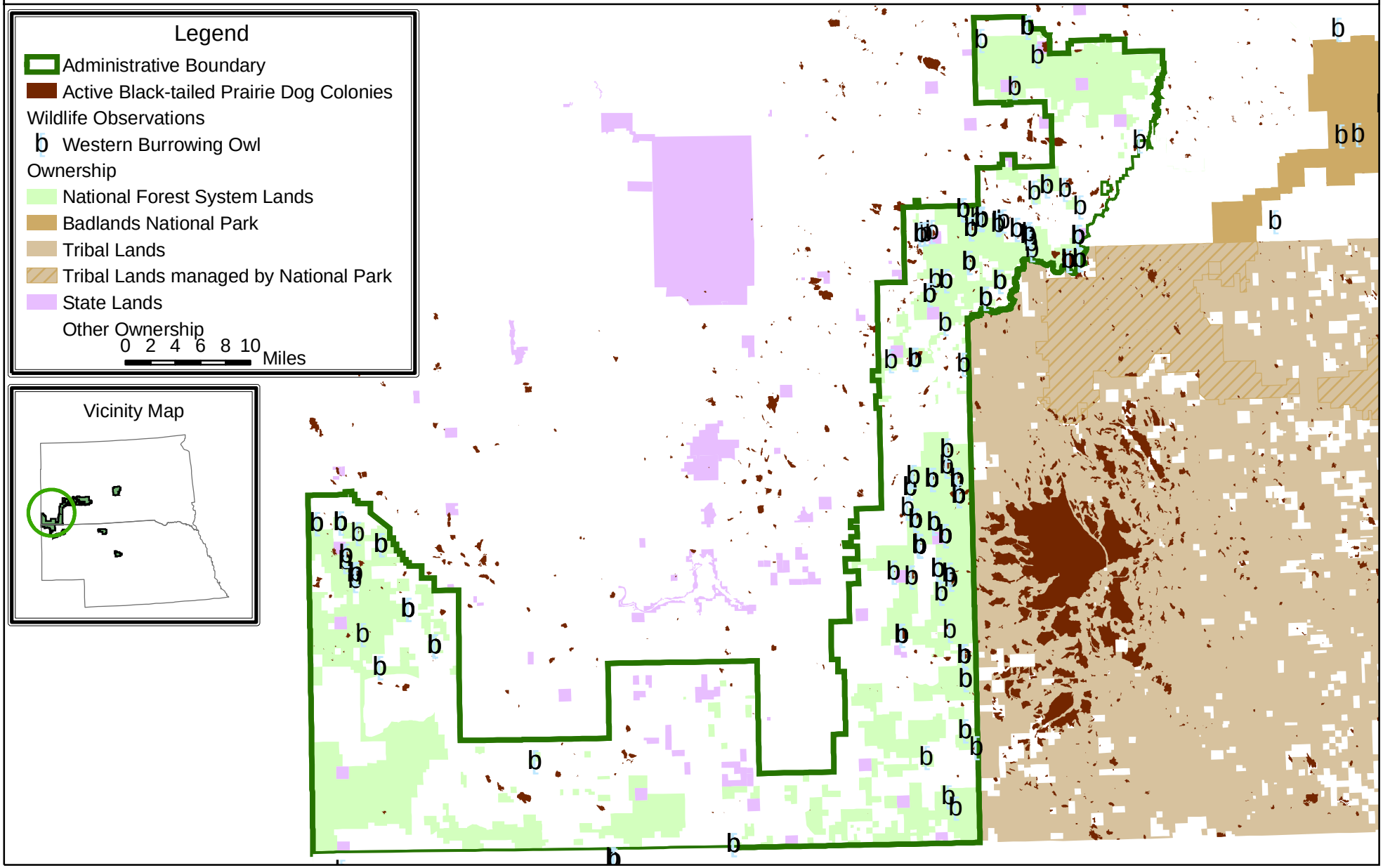


Map E-39

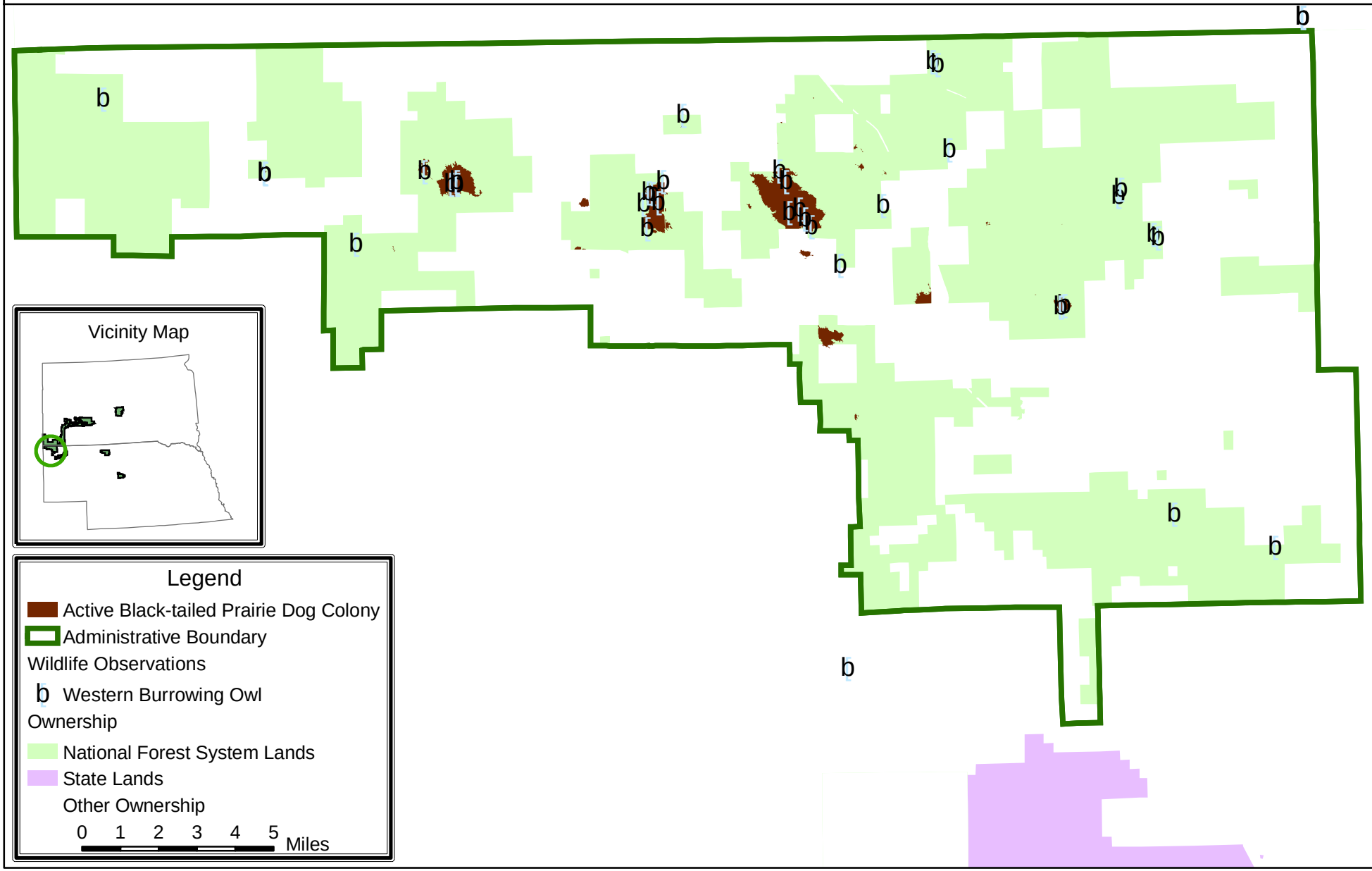
Western Burrowing Owl Observations
East Half Buffalo Gap National Grassland



Western Burrowing Owl Observations
West Half Buffalo Gap National Grassland

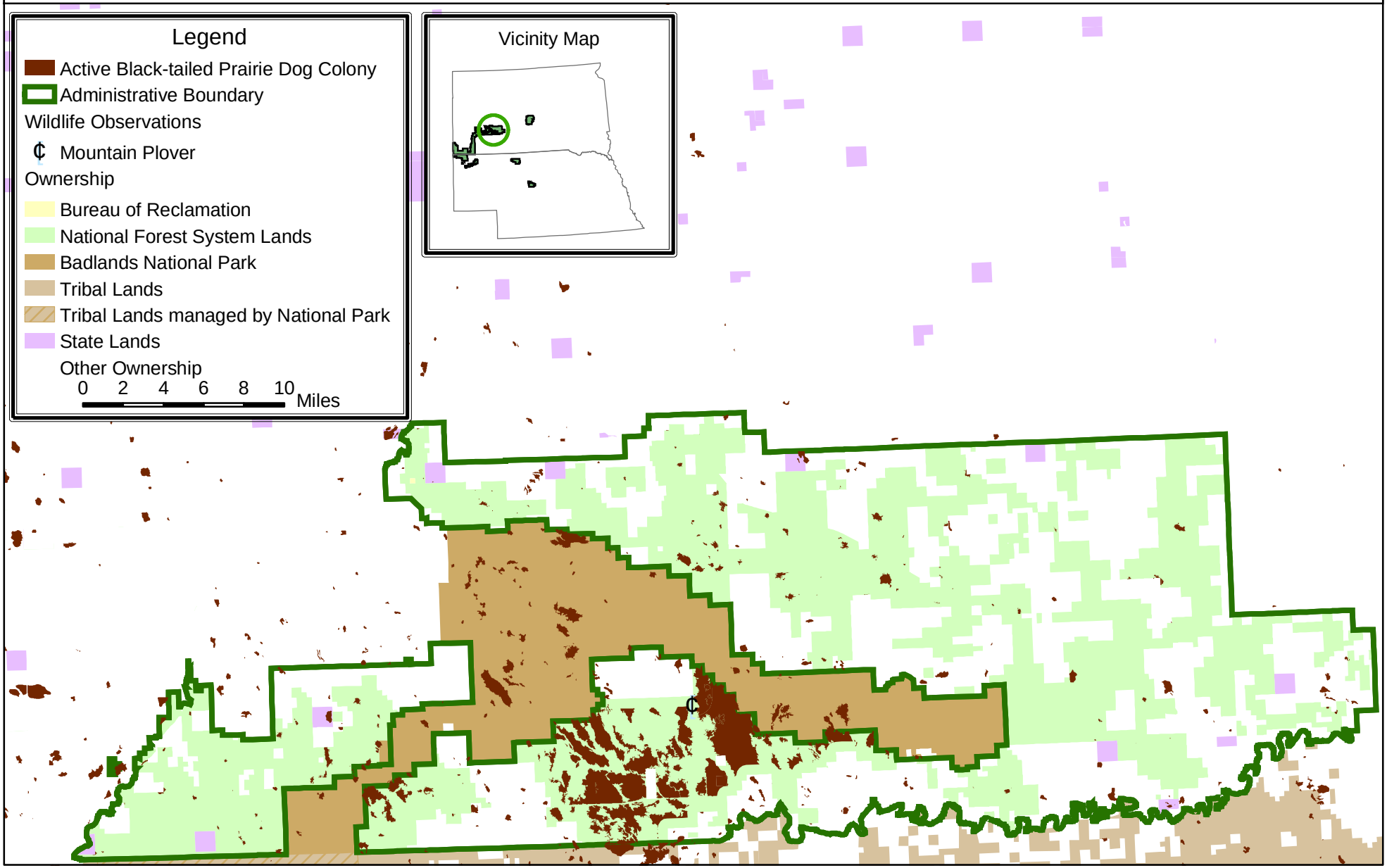


Western Burrowing Owl Observations
Oglala National Grassland

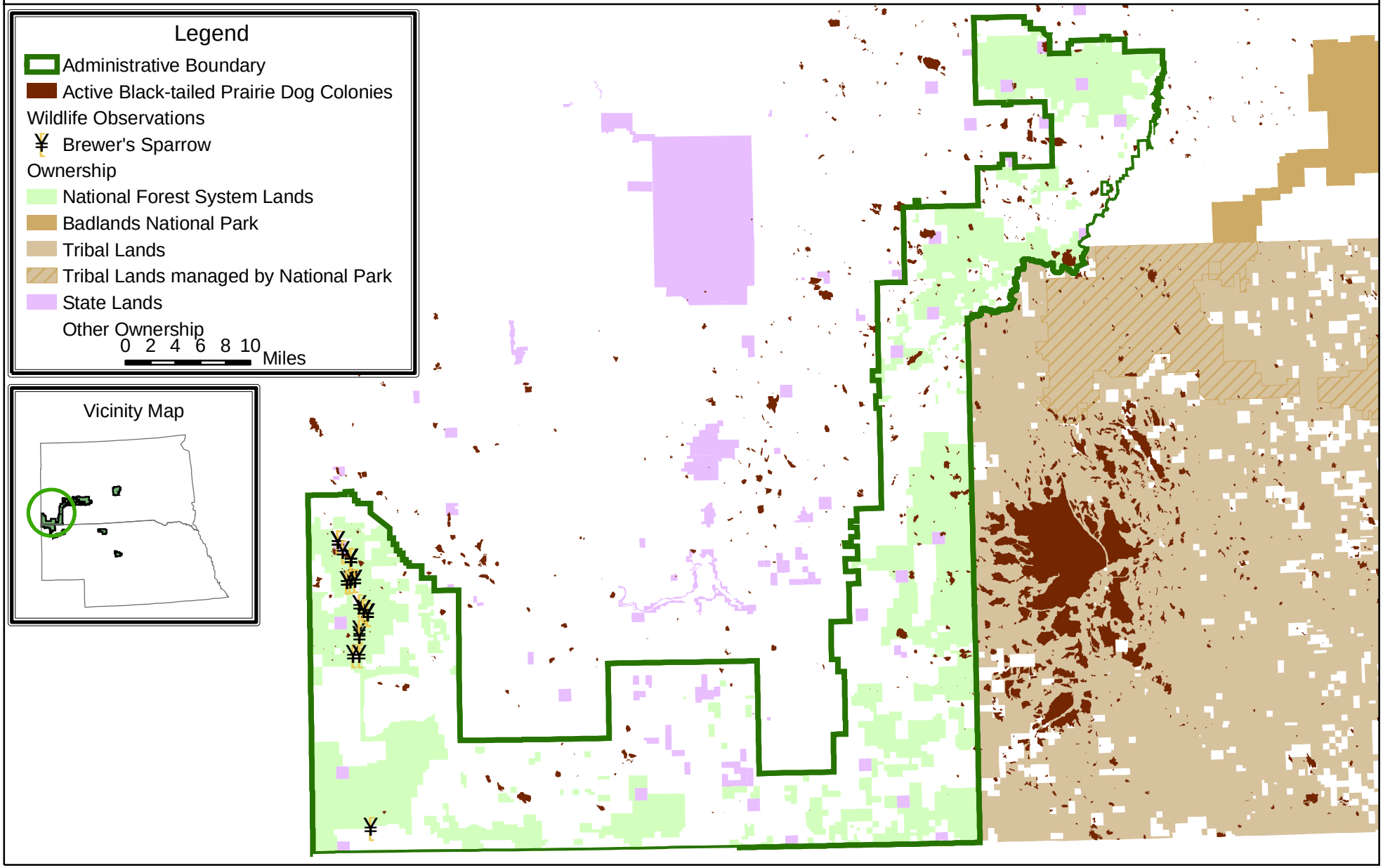


Map E-42

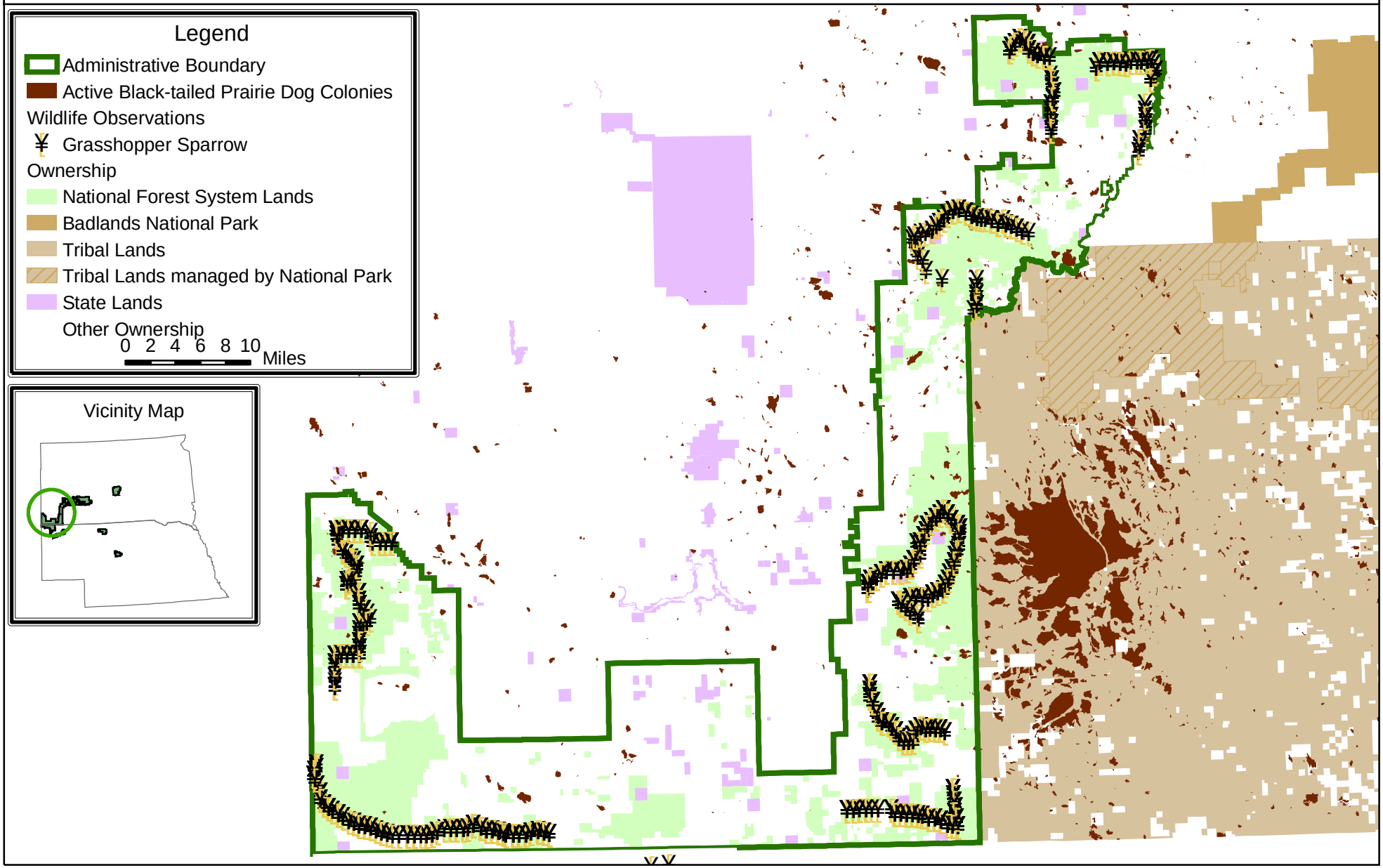
Mountain Plover Observations
East Half Buffalo Gap National Grassland



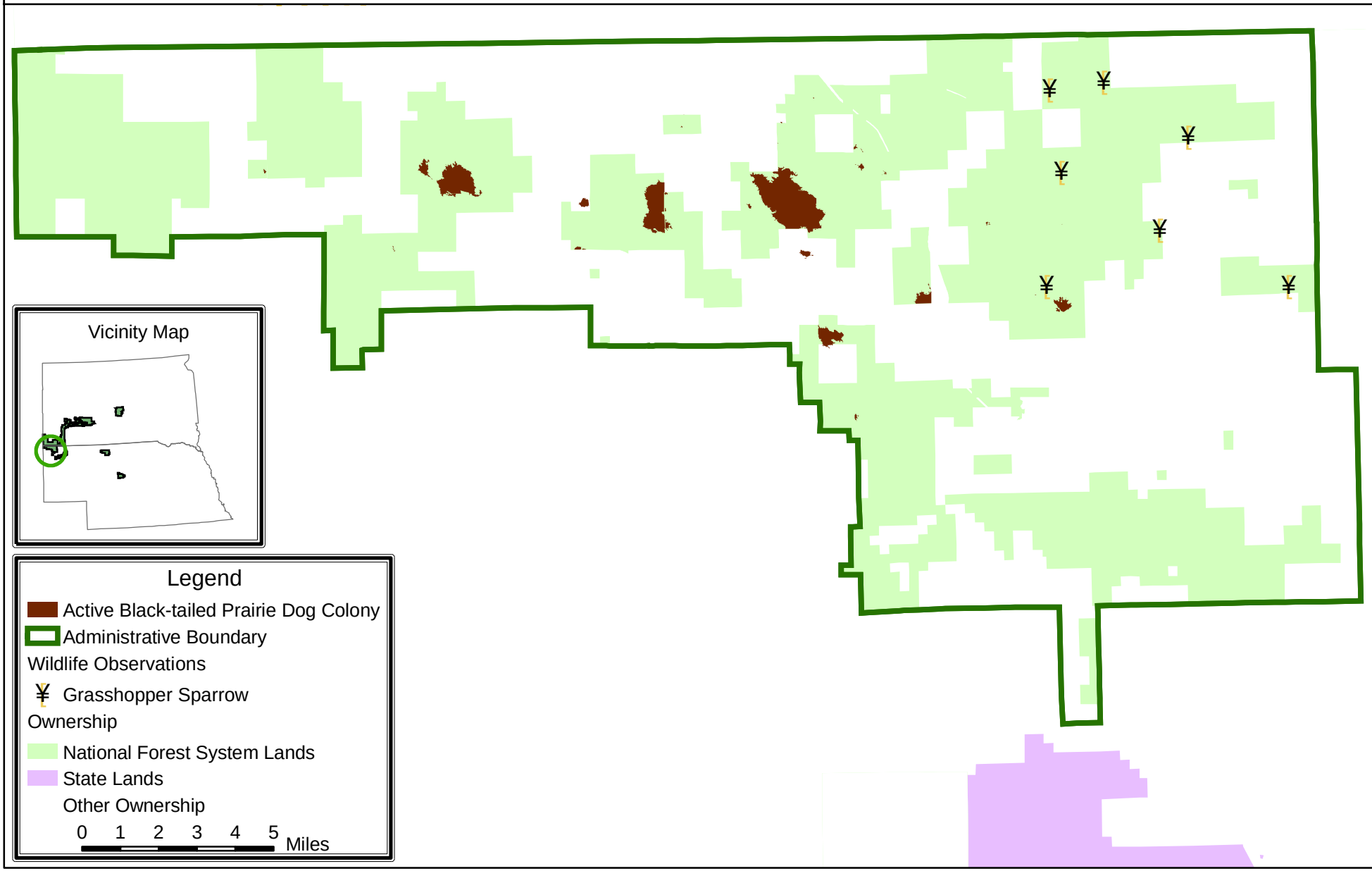
Brewers Sparrow Observations
West Half Buffalo Gap National Grassland



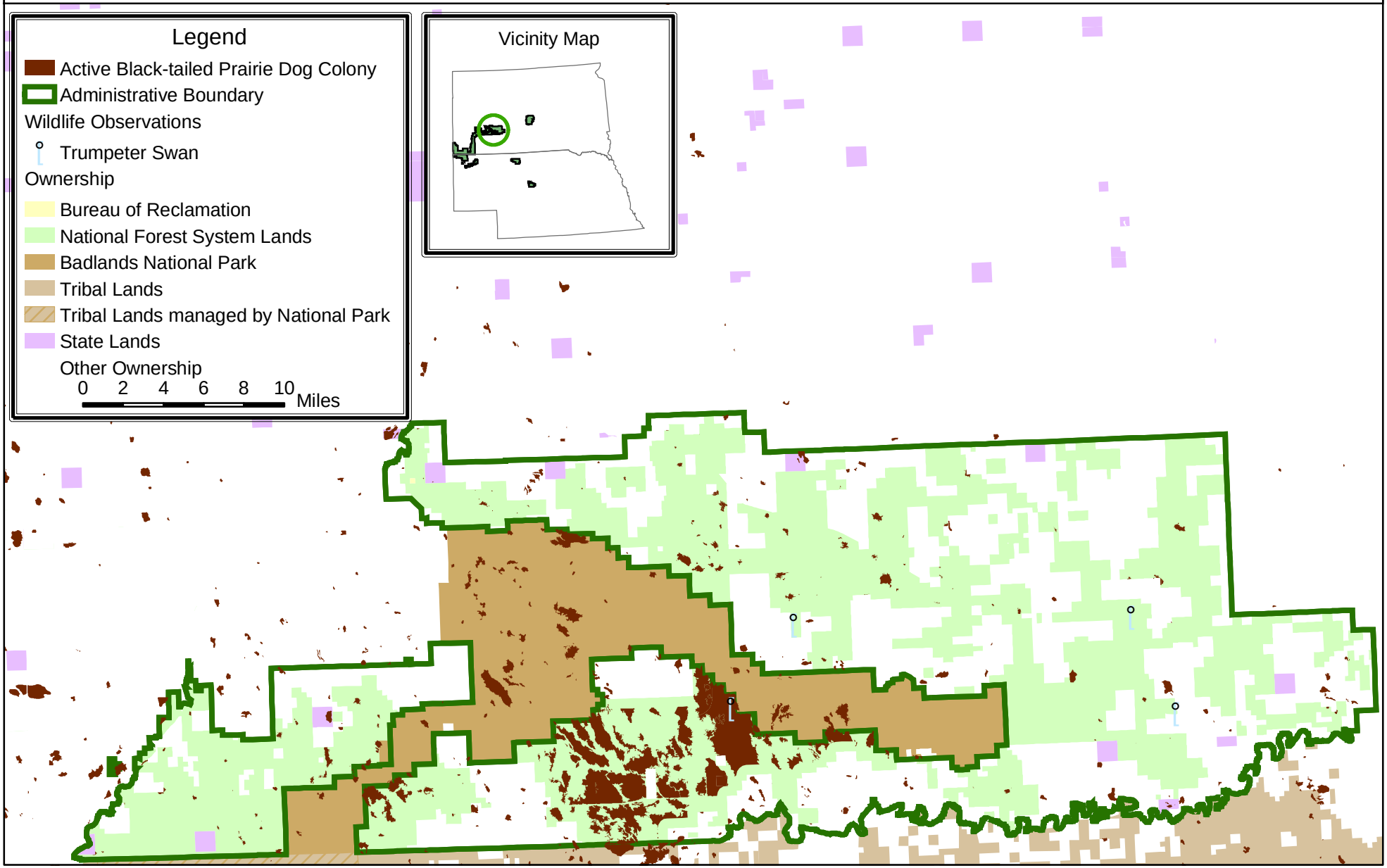
Grasshopper Sparrow Observations
West Half Buffalo Gap National Grassland



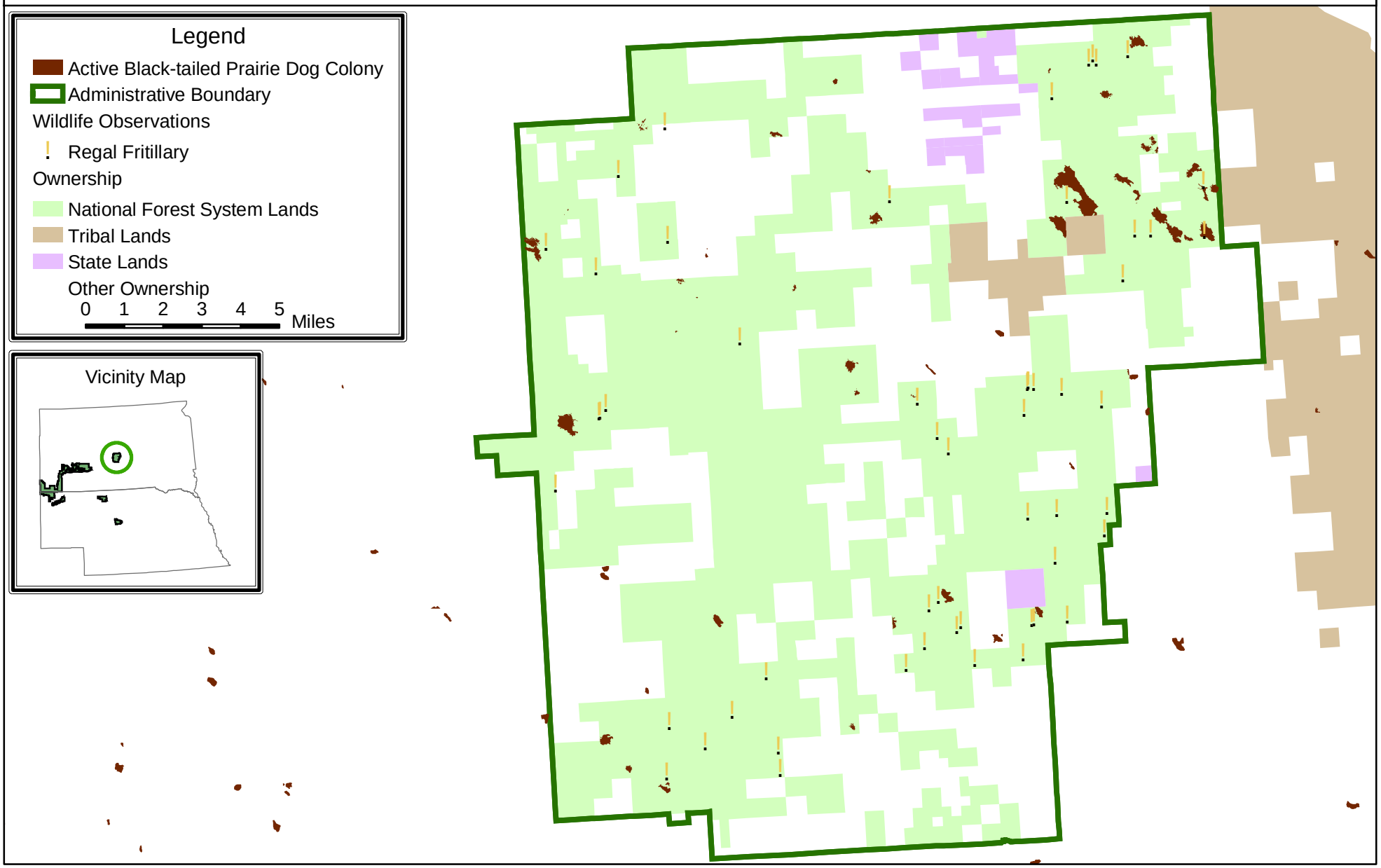
Grasshopper Sparrow Observations
Oglala National Grassland



Trumpeter Swan Observations
East Half Buffalo Gap National Grassland



Regal Fritillary Butterfly Observations
Fort Pierre National Grassland



Regal Fritillary Butterfly Observations
West Half Buffalo Gap National Grassland