

Black-tailed Prairie Dog (*Cynomys ludovicianus*)

January 2003

Fish and Wildlife Habitat Management Leaflet

Number 23

General Information

The black-tailed prairie dog (*Cynomys ludovicianus*) is a diurnal, burrowing rodent that inhabits primarily shortgrass and mixed-grass prairies and desert grasslands of the North American Great Plains. The shortgrass prairie includes rolling to flat plains dominated by native grasses, mainly blue grama and buffalograss. Sandwiched between the shortgrass prairie to the west and the tallgrass prairie to the east is the mixed-grass prairie. Native vegetation includes grama species, western wheatgrass, and grasses and forbs that vary by region. Desert grasslands occur in the southern portion of the range of the black-tailed prairie dog, and may include mesquite, cholla, and yucca. Although adaptable to different kinds of vegetation, black-tailed prairie dogs prefer short vegetation on relatively level terrain (less than 10 percent slope). Grazing by domestic livestock or large, wild ungulates such as bison may improve habitat for prairie dogs by reducing vegetation height and density.

Of the five North American prairie dog species, the black-tailed prairie dog was historically the most common and widespread. Over the last century, the range of the black-tailed prairie dog has been greatly reduced. Population decline has been primarily caused by habitat loss. Remaining populations are small and isolated as a result of habitat fragmentation. Intentional eradication efforts with the intent of improving range condition for livestock, and unregulated recreational shooting have also affected populations in some areas. Sylvatic plague, caused by a bacterium transmitted to black-tailed prairie dogs by fleas, can decimate local colonies. While sylvatic plague has little effect on humans, it results in nearly 100 percent mortality in infected prairie dog colonies. Residential development and intensification of agricultural and other land uses are also factors affecting prairie dog populations.



Victor Love, IBM Boulder, Colorado

Black-tailed prairie dogs are highly social, gregarious animals. Prairie dog "towns" are composed of smaller groups called "wards," and even smaller family units called "coteries."

Many other wildlife species use the unique habitat created by the foraging and burrowing activities of prairie dogs. Prairie dogs also serve as an important food base for many predators, including ferruginous hawks and other raptors. Mammalian predators include badgers, coyotes, bobcats, and foxes. The most endangered mammal in North America, the black-footed ferret, relies exclusively on prairie dogs for food and their burrow systems for cover. The burrowing owl uses abandoned tunnel systems for nesting. Mountain plovers and horned larks prefer the mosaic of bare ground-short grass habitat maintained by prairie dog activities. Rattlesnakes and other reptiles, rabbits, hares, and small mammals are drawn to the food and cover associated within prairie dog towns. Grassland birds such as meadowlarks are also attracted to insects that inhabit prairie dog towns.

The relationship between black-tailed prairie dog clipping and foraging activities and quality and availability of forage for domestic livestock is commonly misunderstood. Clipping refers to the action of removing,

Federal and State Status of the Black-tailed Prairie Dog

Federal agency status:

U.S. Fish and Wildlife Service—Candidate
Bureau of Land Management—Special

State status:

Montana—Nongame wildlife
North Dakota—Nongame wildlife
South Dakota—Game wildlife
Wyoming—Species of Special Concern
Nebraska—Nongame wildlife
Kansas—Wildlife
Colorado—Small game species
New Mexico—No legal listing
Arizona—Extirpated
Oklahoma—Species of Special Concern
Texas—Nongame wildlife

Status in Mexico:

Amenazada—Threatened

**for more information about global, federal, state, Natural Heritage Program, and other rankings for individual species, see the Association for Biodiversity Information website at <http://www.abi.org>.*



W. Gilgert, NRCS

Black-tailed prairie dogs clip the vegetation around burrow entrances to increase visibility.

livestock for forage. Burrowing and foraging activities can also damage crops, irrigation systems, and increase erosion. However, black-tailed prairie dogs may not always directly compete with livestock for forage (depending on season, prescribed grazing system used and stocking rates). While prairie dogs do reduce the total amount of forage available for livestock within their colonies, clipping activities which maintain the vegetation in early successional stages has been shown to improve the nutritional quality of the forage that remains. On the other hand, if the height of this remaining vegetation is too low for cattle to graze (e.g., < 2 inches tall), very little of this higher quality forage may actually be available for livestock consumption. Black-tailed prairie dog and livestock management must be evaluated on a case-by-case basis to meet range condition, landowner, and natural resource objectives.

but not consuming, vegetation near burrows to increase visibility needed to detect predators. Clipped vegetation may be placed in underground chambers, possibly as nest lining. Similar to grazing, burning, and other disturbances that remove mature vegetation, clipping encourages new plant growth that is palatable to other wild herbivores and domestic livestock.

The black-tailed prairie dog was part of the original, biologically productive ecological system that brought cattlemen to the grasslands of the Great Plains. Ranchers and other landowners have long viewed prairie dogs as agricultural pests that compete with domestic

This leaflet provides an introduction to the habitat requirements and management of black-tailed prairie dogs to assist landowners and managers in developing comprehensive prairie dog management plans. The success of any species-specific management plan depends on analyzing existing habitat conditions to ensure that all required habitat elements for the desired species are present. Habitat management practices that can be used to enhance black-tailed prairie dog habitat are suggested. Landowners and managers are encouraged to enlist the expertise of wildlife and natural resource professionals to help identify additional habitat management needs and actions.

Range

The historical range of the black-tailed prairie dog extends from extreme southern Saskatchewan, south through eastern Montana, southwest North Dakota, western South Dakota, eastern Wyoming, most of Nebraska and Kansas, eastern Colorado, most of New Mexico, southeast Arizona, western Oklahoma, northwest Texas, and extreme northern Mexico. Black-tailed prairie dogs currently occupy only about one million acres within their historical range. Estimates of the acreage this species once occupied range from 100 million acres to over 300 million acres. For comparisons of historical and current ranges, population estimates, and 10-year acreage objectives for the black-tailed prairie dog by state, see Van Pelt 1999 and Luce 2001.



Historical range of the black-tailed prairie dog in the continental United States. For a comparison of historical and current range and population estimates by state, see Van Pelt 1999 and Luce 2001.

Habitat Requirements

General

Prairie dogs are associated with early successional vegetation and shortgrass prairie dominated by buffalograss and grama species, mixed-grass prairies, and desert grasslands grazed by wild herbivores and domestic livestock. They favor or create open areas with low-growing, early successional vegetation. Ungrazed areas with heavy brush or tall grass are avoided. Black-tailed prairie dogs are rarely found above elevations of 7,800 feet and are most commonly found below 6,000 feet. Prairie dogs are active year-round, but may spend extended periods of time underground during winter or harsh weather. Black-tailed prairie dogs hibernate in extreme northern regions and may go into light hibernation during severe winter weather in other portions of their range.

Although black-tailed prairie dogs are year-round residents, they will travel up to 10 miles in search of new territory or other breeding adults. Habitat

Black-tailed Prairie Dog Town Organization

Black-tailed prairie dogs are highly social, gregarious animals that live in large groupings called “towns” or colonies. The largest prairie dog town on record was found by Vernon Bailey in Texas around 1900: 100 miles wide and 250 miles long with approximately 400 million individuals. Population density varies from 5-35 prairie dogs/ac. Towns are divided into smaller “wards,” which are about 5 acres in size. Wards are generally separated by physical barriers such as streams, roads, or groups of trees. Wards are further divided into “coteries.” Coteries typically consist of one adult male, one to four adult females, and any offspring less than two years old (sexual maturity is reached at two years of age). Coteries are about one acre in size and are defended as territories.

Physical Facts

Description: Darker buff, tan, or brownish above; pale buff below; terminal one-third of tail is black; small ears; well-developed claws on feet for digging.

Size: Head and body length 11-13 inches (28-33cm); tail length 3-4 inches (76-102 mm).

Weight: 2-3 lbs (900-1350 g).

Voice: Danger signal is a two-syllable bark repeated at a rate of about 40 barks per minute.

Breeding, gestation, and young: Breed January-March in southern parts of range, March-April in more northern parts of range; gestation 28-32 days, young usually born in April/May; one litter per year, usually 3-6 naked pups; at 5-6 weeks of age pups emerge for first time to graze vegetation.

Behavior: Highly social; physical contact very important within coterie; mouth-to-mouth greetings and grooming.

Comments: Typically live 3-4 years in the wild; breed at two years of age; diurnal, active during daylight hours; retreat to burrows during hottest times of day and at night; similar species include the white-tailed prairie dog, Gunnison's prairie dog, and the rock squirrel (smaller with longer tail).

requirements for breeding, foraging, and overwintering are similar. Nesting chambers are excavated in the underground burrow systems, and may be lined with dried grass clippings removed from around burrow entrances.

The clipping and foraging habits of black-tailed prairie dogs create a unique habitat of bare ground and short, sparse vegetation. As previously mentioned, several other wildlife species utilize these microhabitats for food and cover. Prairie dog foraging and digging activities may also alter vegetation composition over time to favor early-successional grasses and forbs.

Food

Grasses make up 60-95 percent of the black-tailed prairie dog diet, but preferred vegetation may vary regionally. Favored grasses include big bluestem, little bluestem, grama species, buffalograss, western wheatgrass, and sedges. Forbs such as scarlet globe mallow, tansyleaf aster, peppergrass, woolly plantain, and others are also important food plants, especially in the fall as grasses mature and decline in nutritional value. Seeds, roots, and shoots of forbs and grasses are also consumed, along with occasional grasshoppers and

other invertebrates. Any type of vegetation is consumed during winter.

The vegetation around burrow entrances is repeatedly clipped very close to the ground. In regions characterized by higher amounts of above-ground biomass produced by mid- and tallgrass species, continuous clipping actions reduce standing forage. Repeated clipping also favors some forbs, as well as growth of shortgrass species that are more resistant to constant grazing.

Water

Water content of vegetation consumed is sufficient to meet black-tailed prairie dog daily water requirements. Metabolic water is also retained.

Minimum habitat requirements

Studies in Colorado found active (occupied) black-tailed prairie dog colony size to range from one acre to 4,129 acres, with an average active colony size of 75 acres. Most active colonies were in the 1 to 20-acre size category, the second most common size category was 20 to 100 acres.

Limiting Factors

Table 1 provides a summary of black-tailed prairie dog habitat requirements. For planning purposes, use Table 2 to subjectively rate the availability and quality of black-tailed prairie dog habitat within a planning area, based on the habitat requirement descriptions listed in Table 1. Habitat communities and components that are absent or given a low rating are likely limiting black-tailed prairie dog habitat quality. Land uses on adjacent properties may need to be considered to accurately rate the quality of a habitat management area for prairie dogs.

Habitat Management Recommendations

Effective black-tailed prairie dog habitat management typically utilizes livestock grazing systems focused on maintaining native grassland vegetation. For long-term management of black-tailed prairie dogs, effective habitat management offers advantages for other wild-life and overall rangeland sustainability.

Two common habitat modification methods used to manage prairie dog populations are: 1) Maintaining and enhancing shortgrass range conditions, and 2)

Burrow Systems

Many black-tailed prairie dog towns have an extensive underground burrow system, with up to 30-50 burrows per acre. Prairie dogs use their claws, which are well-adapted for digging, to excavate tunnels and chambers. Tunnels generally extend three to six feet below the ground surface, and may be 15 feet long. Several chambers may be hollowed out, including one or more nest chambers. Burrow systems are well ventilated. Excavated soil piled up in mounds around burrows serve as lookout points. Mounds can be one to two feet high, and mound groupings can be 25-75 feet apart.

implementing prescribed grazing systems that include the black-tailed prairie dog as an animal unit when determining stocking rate, if large numbers of prairie dogs are present. Studies show that density of active burrows is higher in areas heavily grazed by livestock. In mid- and tallgrass regions the intensity of livestock grazing helps regulate the size and density of prairie

Table 1. Summary of black-tailed prairie dog habitat requirements.

Habitat component	Habitat requirements
Food	Grasses make up 60-95 percent of diet.
	Favored grasses include big bluestem, little bluestem, grama species, buffalograss, western wheatgrass, and sedges.
	Forbs important, especially in fall. Favored forbs include scarlet globe-mallow, peppergrass, woolly plaitain, and others depending on region.
	Seeds, roots, and shoots of grasses and forbs consumed during winter. Occasional grasshopper or other invertebrate consumed.
Water	Daily water requirements met by vegetation consumed.
Habitat, year-round	Favor open areas with low vegetation.
	Associated with native shortgrass prairie dominated by buffalograss and grama species, along with other grasses and forbs that vary by region.
	Also inhabit mixed-grass prairies or rangelands heavily grazed by domestic livestock or wild ungulates.
	Ungrazed areas with heavy brush or taller grasses are avoided.
Minimum habitat size	Average active colony size in Colorado study is 75 acres.
	Most active colonies between one acre and 20 acres.

Table 2. Factors that can limit habitat quality/quantity for black-tailed prairie dogs.

Habitat Component	Availability/Quality			
	High	Medium	Low	Absent
Food				
General habitat (amount of short vegetation)				
Minimum habitat size				

dog populations. If mid- and tallgrasses are present and livestock are removed, prairie dogs may abandon the site.

Adjusting livestock stocking rates is an effective means of managing prairie dog populations by maintaining plant stand diversity and height. Prescribed grazing that provides rest, or deferment, periods for sections of pasture or grazing land during the growing season allows vegetation to recover. Studies show that after a few years of successive deferment during the growing season, black-tailed prairie dog populations declined because the cattle were not present to reduce plant height to the suitability of prairie dogs. Even distribution of watering facilities and salt licks can also help manage prairie dog activities by controlling where livestock gather.

Table 3 lists management activities that can be undertaken to maintain and improve black-tailed prairie dog habitat quality. Select conservation practices and assistance programs are also listed.

In many instances, successful prairie dog management involves intensively grazing sections of land from time to time. In so doing, care must be taken to ensure plant damage does not occur. This practice can be done to essentially mimic the natural disturbance patterns of the large herds of bison that once inhabited much of the North American shortgrass prairie. Rotational grazing and other management prescriptions should be undertaken in the context of maintaining the desired habitat structure that occurs within the capability of the Ecological Site. For more information on use of Ecological Sites in rangeland management, refer to the NRCS Ecological Site Information System at <http://trident.itc.nrcs.usda.gov/esis>.

Landowner Assistance

Various private and public organizations can give rangeland owners and managers technical and financial natural resource planning assistance. Table 4 lists specific programs that provide assistance in implementing a variety of wildlife and natural resource conservation activities.

Conservation measures

In February 2000, the U.S. Fish and Wildlife Service concluded that the black-tailed prairie dog is “warranted” for listing as a threatened species under the Endangered Species Act (ESA) but “precluded” from listing due to limited agency resources. Notwithstanding efforts to list the species under the ESA to increase protection, a number of public and private conservation measures are being undertaken to benefit black-tailed prairie dog populations.

State and tribal governments have developed black-tailed prairie dog management and recovery plans. As of this writing, a number of states that contain black-tailed prairie dog historical range (Arizona, Kansas, Montana, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas) had signed a Memorandum of Understanding to develop a plan to manage, maintain and enhance prairie dog populations and their habitat across their historical range. Other states (e.g., Colorado and North Dakota) are developing prairie dog management plans as well. The multi-state Conservation Strategy seeks to reduce threats to black-tailed prairie dog habitats and populations through the voluntary cooperation of public and private landowners. The states are considering implementing landowner incentive programs to encourage

Table 3. Management options for increasing habitat quality or availability for black-tailed prairie dogs.

Habitat component	Management options for increasing habitat quality or availability	Conservation practices & assistance programs*
Food	If restoring croplands with native grass or reseeding range, use native grasses and forbs suited to the region; favored foods include sedges, western wheatgrass, grama grasses, and others; native forbs an important fall diet component.	327, 528A, 645, 647 WHIP, PFW
	Limit pesticide use on occupied or potential black-tailed prairie dog habitat.	
	Use mechanical treatments, prescribed burns, or other methods to control woody species; can use prescribed grazing system for domestic livestock or allow intensive grazing by wild ungulates such as bison and pronghorn antelope.	338, 528A, 645, 647 PFW, WHIP, EQIP
Breeding and winter cover	If trying to increase black-tailed prairie dog habitat use, implement beneficial prescribed grazing on mixed-grass and tallgrass regions, especially if near an active prairie dog town.	528A PFW, WHIP, EQIP
	Use mechanical treatments, prescribed burns, or other measures to control woody species; can use prescribed grazing system for domestic livestock or allow intensive grazing by wild ungulates such as bison and pronghorn antelope.	338, 528A, 645, 647 PFW, WHIP, EQIP
	If restoring croplands with native grass, allow intensive grazing to encourage shortgrasses and keep them from being shaded out by exotic and midgrass species and taller vegetation.	327, 338 WHIP, EQIP, PFW, CRP
	Limit pesticide use on occupied or potential black-tailed prairie dog habitat.	
Habitat interspersions	Combine above prescriptions to increase habitat components or amount of suitable prairie dog habitat.	
Minimum habitat size	Provide at least 75 acres of shortgrass prairie to support prairie dog colonies.	
Connectivity	Give priority to habitat within 6 miles of existing colonies.	

* See Table 4 for program descriptions.

landowners to voluntarily protect and manage prairie dog habitat on private lands. All states within the prairie dog's range are assessing prairie dog population size and distribution, and setting long-term acreage and distribution goals. Efforts are also underway to explore changes in regulations to limit control by poisoning, if necessary, to maintain viable populations.

More information is needed to facilitate proper management of black-tailed prairie dog populations and their habitat. Specifically, more research is needed on the effects of sylvatic plague on infected and recovering black-tailed prairie dog populations. Other

NRCS Conservation practices that may be useful in undertaking the above management actions.

Conservation Practice	Code
Brush Management	314
Conservation Cover	327
Prescribed Burning	338
Prescribed Grazing	528A
Range Planting	550
Wetland Wildlife Habitat Management	644
Upland Wildlife Management	645
Early Successional Habitat Development	647

Grazing Management Terms

Animal Unit (AU): An animal unit (AU) is one mature cow of approximately 1,000 pounds and a calf up to weaning, usually 6 months of age, or their equivalent.

Koford (1958) determined that 256 prairie dogs are equivalent to one cow in terms of forage consumption.

Animal Unit Month (AUM): The amount of forage required by an animal unit for 1 month.

Stocking rate: The number of specific kinds and classes of animals grazing or utilizing a unit of land for a specific period of time. May be expressed as animals per acre, hectare, or section, or the reciprocal (area of land/animal). When dual use is practiced (e.g., cattle and sheep), stocking rate is often expressed as animal units per unit of land or the reciprocal.

Grazing system: A specialization of grazing management that defines systematically recurring periods of grazing and deferment for two or more pastures or management units. Descriptive common names, such as Merrill, Hormay, or South African switchback, may be used. However, the first usage of a grazing system name in a publication should be followed by a description using a standard format. This format shall consist of a numerical description in the following prescribed order: the number of pastures (or units), number of herds, length of grazing periods, length of deferment periods for any given unit in the system followed by an abbreviation of the unit of time used.

Examples:

Merrill system (4-3;12: 4 mo.) is a grazing system with 4 pastures, 3 herds of livestock, a 12-month grazing period, and a 4-month deferment period.

South African switchback (2-1;3:3,6:3,3:6 mo.) is a grazing system with 2 pastures, 1 herd, and a grazing schedule of 3 months grazing, 3 months deferment, 6 months grazing, 3 months deferment, 3 months grazing, 6 months deferment.

High intensity, low frequency (HILF) (14-1; 12:156 da.) A grazing system consisting of 14 pastures, 1 herd, a 12-day grazing period, and a 156-day deferment period for each pasture.

needs include adequate funding for state and tribal agencies to implement recovery plans, to conduct surveys to determine ongoing population status and habitat conditions, and to develop specific parameters to measure success of recovery efforts and conservation programs. Additional information is also needed to better understand the interaction between prairie dogs and livestock and how the prairie ecosystem can be managed to accommodate both in a sustainable manner.

Conclusion

Black-tailed prairie dogs affect rangeland habitats by influencing plant species diversity and composition and

creating habitat favored by other rangeland wildlife species. Prairie dog activities often increase and diversify the composition of grasses and forbs within their colonies. Grazing and clipping activities favor disturbance-resistant shortgrass prairie grasses and forbs. The bare ground around burrows attracts invertebrates, which in turn attract some species of grassland birds. Prairie dog towns may support a higher biomass of small mammals, invertebrates, and songbirds than rangeland not inhabited by prairie dogs. Some wildlife species rely on habitat conditions produced by black-tailed prairie dog activities, and the needs of these species should be taken into consideration when developing a comprehensive management plan for black-tailed prairie dogs.

Table 4. Programs that provide technical and financial assistance to develop fish and wild-life habitat.

Program	Land eligibility	Type of assistance	Contact
Conservation Reserve Program (CRP)	Highly erodible land, wetland and certain other lands with cropping history. Stream-side areas in pasture land.	50% cost-share for establishing permanent cover and conservation practices, and annual rental payments for land enrolled in 10- to 15-year contracts. Additional financial incentives available for some practices.	NRCS or FSA state or county office
Environmental Quality Incentives Program (EQIP)	Cropland, range, grazing land and other agricultural land in need of treatment.	Up to 75% cost-share for conservation practices in accordance with 1- to 10-year contracts. Incentive payments for certain management practices.	NRCS state or local office
Partners for Fish and Wildlife Program (PFW)	Most degraded fish and/or wildlife habitat.	Up to 100% financial and technical assistance to restore wildlife habitat under minimum 10-year cooperative agreements.	Local office of the U.S. Fish and Wildlife Service
Waterways for Wildlife	Private lands.	Technical and program development assistance to coalesce habitat efforts of corporations and private landowners to meet common watershed level goals.	Wildlife Habitat Council
Wildlife at Work	Corporate lands.	Technical assistance on developing habitat projects into programs that allow companies to involve employees and the community.	Wildlife Habitat Council
Wildlife Habitat Incentives Program (WHIP)	High-priority fish and wildlife habitats.	Up to 75% cost-share for conservation practices under 5- to 10-year contracts.	NRCS state or local office

State fish and wildlife agencies as well as private groups may have additional assistance programs.

Black-tailed prairie dogs often inhabit areas grazed by livestock, so managing their habitat frequently involves careful coordination of natural resource objectives, stocking rates, and prescribed grazing systems. Managers should recognize that in many instances, the presence of prairie dogs may involve some trade-off in the availability of forage for livestock. Successfully managing forage for livestock and habitat for prairie dogs involves balancing the needs of all the “grazers” that occur on the prairie landscape. Landowners can take advantage of technical and financial assistance programs to help them meet prairie dog habitat needs and livestock production goals in a sustainable manner.

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In cooperation with partners, the mission of the Wildlife Habitat Management Institute is to develop and disseminate scientifically based technical materials that will assist NRCS field staffs and others to promote conservation stewardship of fish and wildlife, and deliver sound habitat management principles and practices to America's land users.



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