

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

Element Code: AMAFB06010
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Cynomys ludovicianus*
COMMON NAME: Black-tailed Prairie Dog
SYNONYMS:
FAMILY: Sciuridae

AUTHOR, PLACE OF PUBLICATION: Mearns, Bull. Amer. Mus. Nat. Hist. 2:303. 1890.

TYPE LOCALITY: Subspecies *arizonensis*: Point of Mountain, near Willcox, Cochise County, Arizona.

TYPE SPECIMEN: Subspecies *arizonensis* collected by Mearns in 1885 at Point of Mountain, near Willcox, Cochise County, Arizona, and was originally described as a new species, the Arizona prairie dog (*Cynomys arizonensis*) (1890).

TAXONOMIC UNIQUENESS: The subspecies of *Cynomys ludovicianus* in Arizona is *arizonensis*, referred by some at the full species level *C. arizonensis*. According to Hoffmeister, the *C. l. arizonensis* specimen from Willcox, demonstrated a difference at the P <.05 level for hind foot with no significant difference in the other 17 measurements. Hoffmeister considers the species monotypic.

According to NatureServe (2004), "Four species of *Cynomys* occur in the United States, and one (*C. mexicanus*) is endemic to Mexico. The prairie dogs found in the U.S. are grouped into two subgenera, the white-tailed prairie dogs (subgenus *Leucocrossuromys*), and the black-tailed prairie dog (subgenus *Cynomys*). The three species in the white-tailed subgenus are 1) the Utah prairie dog (*C. parvidens*), found only in southern Utah (Pizzimenti and Collier 1975), 2) the white-tailed prairie dog (*C. leucurus*), found in Colorado, Utah, Wyoming, and Montana (Clark et al. 1971), and 3) the relatively abundant Gunnison's prairie dog (*C. gunnisoni*), found in Colorado, Utah, Arizona, and New Mexico (Pizzimenti and Hoffman 1973). The single species of black-tailed prairie dog, *C. ludovicianus*, is found on the Great Plains from west Texas to southern Canada (Burt and Grossenheider 1976). The Mexican prairie dog (*C. mexicanus*) occurs in east-central Mexico in the states of Coahuila, Nuevo Leon, Zacatecas, and San Luis Potosi (Ceballos-G. and Wilson 1985).

Hall (1981) listed two subspecies of black-tailed prairie dog, the nominate form and the Arizona prairie dog (*C. ludovicianus arizonensis*). Recent genetic study suggests that the Arizona form does not qualify for subspecies status (Chesser 1979). Some question still exists about the possible subspecific status of certain populations, especially that in the Tularosa Basin of southern New Mexico (Hubbard 1992). New genetic techniques (e.g., PCR) may help clarify the situation (Cully 1992)."

DESCRIPTION: The black-tailed prairie dog is a large, burrowing, ground squirrel belonging to a group of four other prairie dog species found only in North America. It is the largest of all *Cynomys* species weighing 700-1500 grams, and measuring 28-33 cm (11-13 in) from nose tip to rear end. They have short, black-tipped tail (usually greater than 7 cm (2.75 in); 15%-30% of the body length) and small ears. There are no distinguishing markings on their yellowish brown fur; belly is lighter. The 22 teeth include sharp incisors for clipping plant leaves and stems. Four pair of functional mammae.

AIDS TO IDENTIFICATION: *Cynomys gunnisoni* also occurs in Arizona, though not within the historic range of *C. ludovicianus*. The tail of *C. gunnisoni* is tipped with white, and there is five pair of functional mammae.

ILLUSTRATIONS: Color photo (Lasley in <http://www.greglasley.net/btprairie.html>)
Color photo (In http://animaldiversity.ummz.umich.edu/site/accounts/information/Cynomys_ludovicianus.html)
Color photo (C.D. Grondahl, in <http://www.npwrc.usgs.gov/resource/distr/mammals/mammals/prairie.htm>)

TOTAL RANGE: The species is distributed through western Texas and eastern and southern New Mexico, and southeast Arizona northward through eastern Colorado and the western plains states to southern Saskatchewan Canada. The species *arizonensis* ranges from southern and eastern New Mexico and southeast Arizona.

RANGE WITHIN ARIZONA: Formerly southeast Arizona, from the west side of the Huachuca Mountains eastward, and from Bonita southward through the Sulphur Springs Valley. Probably extirpated.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Prairie dogs are active only during daylight hours, and spend a lot of time feeding and socializing. They live in towns, which can cover 1 to 1000 acres. Within the towns, each family or coterie of prairie dogs occupies a territory of about one acre. The basic prairie dog coterie comprises one adult male (at least 2 years old), three or four adult females, and several yearlings or juveniles (Hoogland and Foltz 1982). Large coterie with two or more males occasionally occur. Females remain in their coterie for life, whereas males usually leave within 12-14 months after weaning. The coterie system deteriorates in spring during gestation and lactation (King 1959). An organizational level higher than the coterie is the ward (King 1959), a town subdivision described according to topographic features. Black-tails do not hibernate during winter. They may remain underground for several days during bad weather, but on clear days they will be visible again. According to Hoffmeister (1986), black-tailed prairie dogs have been studied in detail in Colorado, Wyoming and South Dakota. The main predators of these prairie dogs are black-footed ferrets and badgers. The life span for animals in the wild averages 3-4 years.

REPRODUCTION: The breeding system is harem-polygynous, with most females copulating with one male and males with several females. Females are in estrous for several hours of only one day per year. According to Hoffmeister (1986), for the species as a whole, breeding occurs in late February and young are born in late March to early April. Gestation averages about 35 days. Adult females give birth to 3-4 "pups," which remain underground until early

May, when they come above ground to forage on green vegetation. They reach almost adult size by the end of the summer. Though almost all adult females become pregnant, juvenile mortality is high with only one half of copulating females weaning a litter. Minimum breeding age is two years for both sexes.

FOOD HABITS: They consume a wide variety of grasses, weeds and shrubs, feeding on the stem, leaves and seeds which also provide moisture, however, forbs are preferred over grasses. Roots are dug when this food supply is required. Food items are apparently not stored below ground.

HABITAT: Dry, flat, open plains and desert grasslands. Since prairie dogs do not like tall grass, they will choose a site with little vegetation, often in areas heavily grazed by cattle. Burrows are usually quite visible because of the large mound of dirt around the entrance. The mounds provide both a vantage point (often to detect predators) and protection from flooding. Fine to medium textured soils are preferred presumably because burrows and other structures tend to retain their shape and strength better than in coarse, loose soils. Colonies are commonly found on silty clay loams, sandy clay loams, and loams. Tunnels extend downward 3-10 feet, then horizontally for another 10-15 feet, and average 4-5 inches in diameter. These systems are arranged so that wind blows through and provides ventilation. Several tunnels are excavated from the main tunnel to provide nesting and resting areas, and to avoid the hotter part of summer days.

ELEVATION: 3,000 - 5,500 ft. (915 - 1,678 m).

PLANT COMMUNITY: Plains and desert grasslands.

POPULATION TRENDS: *Cynomys ludovicianus* once occurred in considerable numbers in Arizona, but, are believed to have been extirpated in the late 1930's. According to NatureServe (2004) for the species as a whole: "Global Short Term Trend Comments: Declining in some areas, increasing in others; overall trend at present probably stable or slightly decreasing, with a long-term outlook of slow decline (USFWS 2002). Trends in habitat conversion have slowed, and are now no longer a primary threat (USFWS 2002).

The US Forest Service reports a decline of 58 per cent in occupied habitat on National Grasslands from the 1970s to 2000 (USFWS 2000); and abundance at large sites identified as possible ferret introduction sites has declined as much as 90 per cent since 1985 (USFWS 2000). The largest increases are in South Dakota, where the populations are recovering from past persecution in an area that is still plague-free (S. Linner, USFWS, pers. comm.). Some of the past abundance and trend information is in question, and USFWS (2002) emphasized the danger of determining trends based on abundance estimates derived in different ways at different times.

A small stable population exists in Canada (Laing, 1988 COSEWIC report; USFWS 2000). Range and abundance continue to decline in Mexico, where the largest remaining black-tailed prairie dog complex exists (USFWS 2000). From 1988 to 1996, range decreased by 80 percent and occupied habitat declined by 34 percent (see USFWS 2000).

Global Long Term Trend Comments: Area of occupancy has been reduced from about 45 million hectares historically to about 0.56 million hectares, a decline of about 99 per cent

(USFWS 2002). Extent of range has contracted by about 20 per cent; significant range contractions have occurred in Arizona, western New Mexico, Texas, Kansas, Nebraska, Oklahoma, and South Dakota (USFWS 2002). Approximately 37 percent of the historical habitat has been converted to cropland, now generally unavailable due to continuous disturbance.”

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:	None (USDI, FWS Aug 2004) [C (USDI, FWS May 2004)] [C (USDI, FWS 2002)] [C (USDI, FWS 2001)] [None (USDI, FWS 1996)] [C2 (USDI, FWS 1991)]
STATE STATUS:	WSC (AGFD, WSCA in prep) [State Endangered AGFD, TNW 1988]
OTHER STATUS:	Determined Threatened (Secretaria de Medio Ambiente 2000) [Determined Threatened, Secretaria de Desarrollo Social 1994]

MANAGEMENT FACTORS: For reintroduction, long-term planning is needed as well as sufficient 1) area of land and habitat, 2) pre-introduction ecological studies and site preparation, 3) breeding individuals to make a reproducing population, 4) protection, and 5) monitoring and follow up studies.

According to NatureServe (2004), threats fall into four main categories. 1) Exotic disease, particularly sylvatic plague (*Yersinia pestis*) to which prairie dogs are highly susceptible. 2) Loss of habitat to agriculture and urbanization. 3) Habitat fragmentation and its many effects (Miller et al. 1994). 4) Control activities by government, private organizations, and individuals via poisoning and shooting.

PROTECTIVE MEASURES TAKEN: USFWS (Federal Register, 25 March 1999) found that a petition to list this species as threatened under the U.S. Endangered Species Act presented substantial information indicating that listing may be warranted; a status review was initiated. USFWS (2000,2001,2002) determined that listing as Threatened is warranted but precluded by actions of higher priority. USFWS (May 2004) determined that listing as Threatened is not “warranted-but-precluded”, since they received important new information that they are currently analyzing. USFWS (Aug 2004) determined that the proposed rule to list this species as Threatened is not warranted, and it is no longer considered to be a candidate species for listing. This is based on recent distribution, abundance, and trend data that indicates that the threats to this species are not as serious as earlier believed.

SUGGESTED PROJECTS: Inventories are needed range-wide, and they should determine locations and sizes of colonies, ownership, and presence of plague. Also needed are comparative ecological studies of proposed source and introduction sites to determine suitability, and on-site studies of introduction and management of existing colonies in other areas. Other areas where work is needed are prairie dog/predator interactions, long-term

effects of prairie dogs on communities (flora, fauna, soils), and prairie dog subspecies status. Research is especially needed on floral/faunal interactions in the less studied portions of the prairie dog's range, such as southern and northern range limits.

LAND MANAGEMENT/OWNERSHIP:

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

In 1972 a reintroduction was attempted at the Audubon Research Ranch, Elgin, Arizona, but had failed. AGFD has considered other reintroduction efforts from time to time.

D.A. McCullough and R.K. Chesser of Texas Tech University in Lubbock, Texas, stated in an abstract from the 1985 SWAN meetings in Glendale, Arizona, that they used immunoelectrophoresis to investigate the relationships within *Cynomys*. Their results indicate “this technique can be utilized to depict specific differences but that the conservative nature of the immunological reactions may not be adequate for separation of lower levels of classification.”

The Great Plains ecosystem evolved with bison, prairie dogs, and fire as major forces/processes; bison and fire are effectively gone, and the prairie dog is vastly reduced. The black-tailed prairie dog is a keystone species upon which many other prairie species depend, but now “may be as functionally extinct as the bison” (M. Gilpin, pers. comm. in Miller and Cully 2001). Black-footed ferret (*Mustela nigripes*, G1) is almost completely dependent on prairie dogs for food. Mountain plover (*Charadrius montanus*, G2), burrowing owl (*Speotyto cunicularia*, G4), ferruginous hawk (*Buteo regalis*, G4), and swift fox (*Vulpes velox*, G3) are among those animals that are found in greatest numbers on prairie dog towns. The highly fragmented nature of the Great Plains makes dispersal and gene flow between populations problematic. NatureServe (2004).

Revised: 1992-01-02 (DBI)
1992-05-08 (BKP)
1997-03-03 (SMS)
2004-07-30 (AMS)
2004-08-19 (SMS)

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