

GUNNISON'S AND BLACK-TAILED PRAIRIE DOGS

Prairie dogs are members of the squirrel family and include five species: Gunnison's, black-tailed, white-tailed, Utah, and Mexican prairie dogs. Vermejo is home to **Gunnison's (GPD; *Cynomys gunnisoni*)** and **black-tailed prairie dogs (BTPD; *Cynomys ludovicianus*)** with GPDs living in small colonies in the property's upper elevation montane grasslands, while BTPDs inhabit larger colonies on the shortgrass prairie.

GPDs and BTPDs are about 12-15 inches long and weigh roughly 1 to 3 pounds. They have a yellow-brown or light brown coat with darker areas on their head and cheeks, and very small and flat ears. GPDs have white on their tail and BTPD have a black-tipped tail. Their large eyes are set wide on their heads giving them wide peripheral vision. The main diet of the prairie dogs is grasses, forbs, and some shrubs along with seeds, roots and occasionally insects. Females have one litter in spring. GPDs typically have an average of 4-6 pups surviving to leave the burrow about a month after they are born. About half of the pups survive their first year, although estimates suggest that only 15% are alive by the end of their second year. GPDs hibernate or enter a period of torpor (reduced metabolic activity) in winter while BTPDs do not seem to use torpor as frequently.

Keystone Species and Ecosystem Engineer

Both BTPDs and GPDs are a keystone species and ecosystem engineers that support numerous other prairie species by providing a source of food and shelter. This includes endangered black-footed ferrets whose diet is composed almost entirely of prairie dogs and need their burrows for survival. The extensive burrow networks constructed by prairie dogs aerate the soil, add nutrients and organics, allow more water infiltration and ultimately can improve the soils to increase plant diversity and vigor. Prairie dogs, especially the BTPD, historically were co-inhabitants of prairie grasslands with pronghorn and bison; Bison and prairie dogs co-evolved for thousands of years and constitute a grazing association in which bison preferentially graze along the edges of prairie dog colonies because of the availability of high-quality forage and tend to rest within colonies. Reciprocally, bison benefit prairie dogs by increasing nutrient quality of vegetation through their grazing and deposition of dung and urine, and their grazing lowers vegetation height, helping prairie dogs to detect predators.

Burrows

The depth of prairie dog burrow systems is often dictated by local soil characteristics. Prairie dog burrows can be more than 15 feet long and have multiple chambers with different functions, such as for sleeping, caching food, and rearing pups. Burrow depth is commonly 6 feet. They also have numerous access points. These access points are usually characterized by packed mounds of soil around the entrance of the main burrow to give the prairie dog a slightly higher vantage point and prevent surface water flow from entering the burrows. The complex burrows often provide habitat or protection for mice, rabbits, ground squirrels, snakes, birds and invertebrates (terrestrial insects). BTPD burrows on Vermejo's shortgrass prairie are often used by burrowing owls that take over burrows for nesting. The owls not only nest in shallower portions of burrows, but also cache food to eat during brooding. The owls eat a variety of invertebrates and small mammals. Unlike many owl species, burrowing owls are active in the daytime as well as at night, and owl families can often be observed standing together on prairie dog mounds.

Predators

Numerous species prey upon GPDs and BTPDs, including coyotes, hawks, golden eagles, common ravens, badgers, foxes, bobcats, bull snakes and prairie rattlesnakes. Common ravens and ferruginous hawks have learned to sit and wait next to prairie dog mounds to try and catch the prairie dogs as they emerge.

Historically, one of the most common predators was the black-footed ferret. The ferrets hunt the prairie dog in their burrows and are specialist predators that almost exclusively eat prairie dogs.

Habit Range

It is estimated that the GPD historic range in 1916 was 24 million acres. Today, GPDs are found in central to south-central Colorado and north-central New Mexico. It is thought that the species has declined across 90% in its historic home range, and now only exists in fragmented and low density populations. The GPD is considered imperiled in New Mexico. The estimated historic BTPD range was expansive and today's BTPDs still range from Texas and New Mexico north to Canada. However, the current population of BTPD is estimated at only 5% of its historic numbers and is also considered imperiled in New Mexico.

Sylvatic Plague

The biggest current threat to all prairie dog populations, excluding habitat loss due to human development, is sylvatic plague caused by the bacterium *Yersinia pestis*, which is carried by fleas. *Yersinia pestis* is non-native organism that was introduced to North America in 1900. It is the bacterium that causes bubonic plague in humans. When a colony is infected by the plague, the outbreaks can cause greater than 90% mortality. The disease and mortality spreads rapidly, with very few survivors remaining after 6-8 weeks.

Vocalization

Prairie dogs have complex communications through vocalizations. Researchers at Northern Arizona University have found that GPDs have different warning calls for different types of predators. They also have calls specific for establishing territorial boundaries, quieter chirps for communication between mothers and pups, and sentry calls that communicate potential threats to the colony. Although the focus of the study has been on GPD, it is likely that the other species have a similar complex vocalization. BTPDs are known for their jump-yip, basically a jump up and bark, which is used as a territorial claim or an all-clear signal.

TESF Black-footed ferret (*Mustela nigripes*) Project

GPD colonies occur in portions of the montane grasslands of Vermejo. A large colony occupied Castle Rock Park and for a time, had a small population of reintroduced black-footed ferrets. In the early 2000's, a drought cycle began lasting over ten years. The drought caused the decline in the GPD populations to the point that it no longer could support the ferrets. There are currently no known black-footed ferrets on Vermejo. Following the drought, during a short and wet cycle, the remaining GPD Castle Rock colony had an occurrence of sylvatic plague.

The Turner Endangered Species Fund (TESF) has been working to assist with range-wide black-footed ferret recovery and restore the species onto Vermejo's prairie dog colonies for over 25 years.

- **Captive pre-conditioning:** Initial efforts began in 1998 with construction of an outdoor black-footed ferret preconditioning facility Vermejo's shortgrass prairie. Naïve, cage reared ferrets were placed in outdoor pens that simulated a wild environment. Ferrets in these pens lived in active BTPD burrows and

were exposed to live prairie dog prey. Here, they honed natural predatory instincts which prepared them for the wild. Females bred, whelped and weaned kits in these pens. Ferrets preconditioned or born in outdoor pens, and exposed to live prey, have higher post-release survival rates than those that have not. From 1999-2006, 393 ferrets were preconditioned at Vermejo's captive facility before being released at permanent recovery sites across in their former range.

- **Wild pre-conditioning:** From 2005-2007, TEF engaged in wild preconditioning of black-footed ferrets whereby 75 ferrets were released into the wild on Vermejo's BTPD colonies, allowed to learn hunting and survival skills in a wild setting, then recaptured for permanent release at other sites across their historical range.
- **Black-footed ferret releases to establish a Vermejo population:** Year-round releases of ferrets on Vermejo's BTPD colonies occurred from 2008 to 2012, and in 2009 NM's first wild-born black-footed ferret in 75 years was documented on the property. Beginning in 2012, ferrets were also released on Vermejo's GPD colonies. However, due to a combination of drought and plague, Vermejo was unable to sustain stable populations of ferrets over time and they were lost.
- **Additional black-footed ferret releases at Vermejo will not be attempted until an effective method to control plague epizootics is developed.**

Frequently Asked Questions:

1. **Are there black-footed ferrets on Vermejo?** No, unfortunately a combination of drought and plague caused the Gunnison's prairie dog population to decline past a point that would support a viable black-footed ferret population.
2. **How can you tell a Gunnison's prairie dog from a black-tailed prairie dog?** The easiest way to differentiate between the two prairie dogs on Vermejo is where they are located. Black-tailed prairie dogs are mostly on the shortgrass prairie while Gunnison's live in the higher elevation montane grasslands. If you can see their tails, the GPD's are shorter and light colored while the BTPD have a longer black tipped tail.
3. **Can Gunnison's and black-tailed prairie dogs hybridize or interbreed?** The two prairie dogs do not hybridize or interbreed even though their ranges may sometimes overlap. The GPD have 40 chromosomes while the BTPD have 50.