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REOPENING A NICHE AT BADLANDS NATIONAL PARK: THE BLACK-FOOTED FERRET

Prairie dog conservation, not complex biology, holds the key
to recovering this Great Plains predator

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DO YOU REMEMBER when your science teacher brought out the “mystery” box, the one with the hole in the side, and asked you to stick your hand inside and identify an item only by touch? You had no idea what might be encountered. Yet, once you grasped the object, your curiosity peaked and the challenge became an exciting opportunity! Likewise, biologists and resource managers in Badlands National Park, South Dakota, had been groping for years to find a way to restore one of North America’s most endangered terrestrial mammals to its prairie habitat. Finally, after 6 years of preparing for reintroduction, our moment of discovery and triumph came last fall with the arrival of the first black-footed ferrets (*Mustela nigripes*) to be seen in the park in



Figure 1. The first black-footed ferret to be set free in the 1994 Badlands National Park reintroduction eyes the open door of its release cage moments before leaving to freedom.

BACKGROUND

The black-footed ferret’s nocturnal habits do not lend the species to ready study. For an animal first described in 1851 by Audubon and Bachman, and which once ranged from southern Saskatchewan to northern Mexico, practically all ecological information comes from two small populations in South Dakota and Wyoming that went locally extinct after intense, but limited, study. This animal is a highly specialized predator that depends on a single type of habitat—prairie dog (*Cynomys ludovicianus*) colonies. A member of the Mustelid family, the black-footed ferret uses prairie dog burrows for shelter, family rearing, escape from predators, and access to its primary prey, the prairie dog.

The ferret was listed in 1967 as a federal endangered species and in 1978 as a South Dakota endangered species. The

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staff conducted six missions, 3-5 hours each, in parallel with ground telemetry over a 21-day period following release. We detected a total of 62 individual locations, 97% of which occurred within the three release colonies. A majority of telemetry locations (70%) were collected during the first week following release. We noticed that animals moved freely among the three release colonies, but believed their movements within the first 3 weeks after release to be limited to less than 8 km (5 mi). During this time, one radio-collared animal dispersed approximately 8 km (5 mi) and then shed its collar. We also retrieved two other radio collars, but detected no mortalities.

Project staff and volunteers conducted spotlight ground surveys on 21 colonies or focal areas within the reintroduction area (including snowtracking in outlying colonies) over 11 nights from November 28-December 10 (fig. 6). We detected eight ferrets by spotlighting, representing a minimum 22% survivorship 26 days after the last ferret was released; although low, this percentage exceeds the 30-day postrelease survivorship goal of 20%. Before release, we had implanted very tiny transponders (equipped with unique numeric codes) subcutaneously in each ferret to facilitate subsequent identification. After trapping seven of the eight animals and weighing them, we electromagnetically scanned each transponder to identify each ferret. Postrelease survival for the identified ferrets ranged from 21 to 82 days, with 71% being preconditioned. Movements of five animals were limited to the three release colonies, while the three other animals moved up to 8 km (5 mi) into adjacent active prairie dog colonies. Subsequently, snowtracking efforts detected several ferrets.

SUMMARY

Recovering the black-footed ferret to a point of delisting is a daunting task. Reintroduction requires maintenance of partnerships and a large contribution of time and resources. At the regional scale,

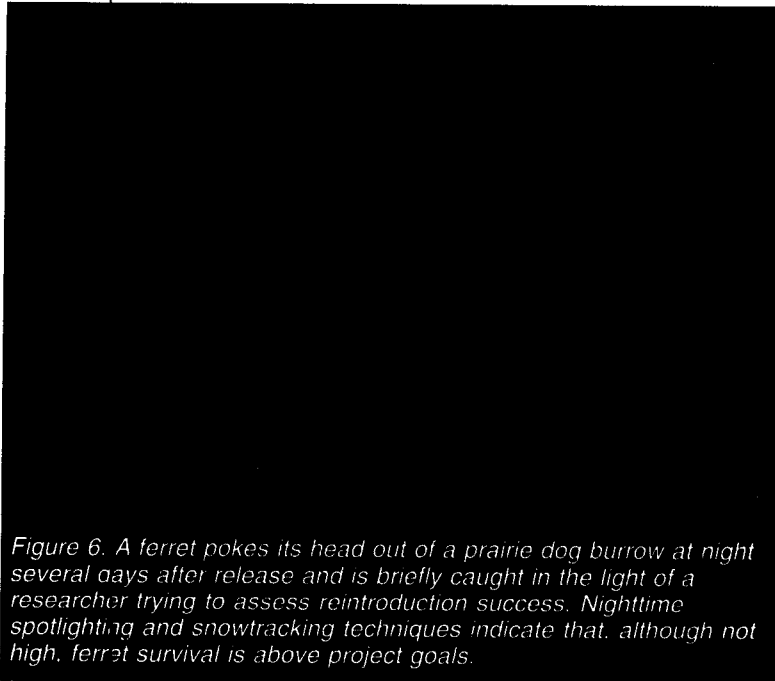


Figure 6. A ferret pokes its head out of a prairie dog burrow at night several days after release and is briefly caught in the light of a researcher trying to assess reintroduction success. Nighttime spotlighting and snowtracking techniques indicate that, although not high, ferret survival is above project goals.

the probability for recovery is a function of available habitat, and habitat lost during the last century is not likely to be recovered. Since 1900, the historic range of the prairie dog has been reduced by approximately 95%, due to disease, agricultural practices, and urban development. Compared with 1870, prairie dogs now occupy only 2% of their historic range (Anderson et al. 1986, in Great Basin Naturalist). If the prairie dog ecosystem of the Great Plains is further eroded and fragmented, ferret recovery will become more desperate.

While reintroduction efforts like this help tremendously to recover the ferret, a basic question still remains. Can the black-footed ferret persist in the wild today and in the future under regional land use practices that rendered it nearly extinct? Hope for its recovery lies in the continuation of a strong, but flexible, Endangered Species Act and a prevailing commitment to the conservation of regional prairie dog ecosystems.

EPILOGUE

Ferret reintroductions continue this year in South Dakota, Wyoming, and Montana. However, the U.S. Fish and Wildlife Service recently released budget priorities for fiscal year 1996 and beyond that jeopardize the captive ferret population, the future availability of reintroduction animals, and the national recovery program.

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proximate cause of decline is habitat loss due to prairie dog control programs, diseases, and land use changes over the past century. Biologists estimate that prairie dog distribution today is less than 5% of its historic levels. During the early 1970s, attempts at captive breeding with animals from the dwindling South Dakota population failed and the last captive animal from that population died in 1979. As such, biologists considered the black-footed ferret extinct until 1981 when another population was discovered near Meeteetse, Wyoming. Following outbreaks of sylvatic plague and canine distemper in 1985-86, biologists removed the final remaining 18 individuals from the wild to attempt another captive breeding program.

The U.S. Fish and Wildlife Service 1988 *National Black-Footed Ferret Recovery Plan* adopted goals to increase the captive breeding population to 240 breeding adults and to establish a prebreeding population of 1,500 free-ranging adults in 10 or more populations with no fewer than 30 breeding adults in any population. The plan also encouraged the widest possible distribution for reintroduced populations. Subsequently, an intensely successful breeding program at seven facilities in the United States and Canada increased the captive population in excess of 240, the number expected to retain 80% of the genetic diversity of the founders for 200 years. From 1991-93, biologists released 187 ferrets under a nonessential experimental population designation in Shirley Basin, Wyoming. This designation provides flexibility by allowing biological manipulation of the population for recovery purposes.

In 1994, the National Park Service, U.S. Forest Service, and U.S. Fish and Wildlife Service suggested reintroducing the ferret into the Conata Basin-Badlands prairie dog complex of southwestern South Dakota in an interagency environ-

mental impact statement. The Fish and Wildlife Service published a final rule on August 18, 1994, designating a nonessential experimental population area. Subsequently, each agency signed a separate record of decision to implement the preferred alternative to reintroduce black-footed ferrets in Badlands National Park in the fall of 1994. Our goal for South Dakota is to reintroduce 40 black-footed ferrets each year for 5 years beginning in 1994.

REINTRODUCTION

Site Selection and Preparation

During spring 1994, we selected three black-tailed prairie dog colonies (415 park hectares or 1,025 acres), also known as towns, as locales for fall ferret release (fig. 2). Altogether, approximately 3,726 ha (hectares, or 9,200 acres) of suitable prairie dog colonies exist in or adjacent to the park and lie within the prescribed 17,010 ha (42,000 acre) reintroduction area. We chose the release towns based on habitat quality, juxtaposition within the overall complex, remoteness from visitors, and field crew accessibility. A

pact to cultural resources. We used a helicopter to airlift over 4 tons of supplies used in constructing 28 release cages-bison exclosures several months before the ferrets arrived. From June through August 1994, we were busy live-trapping and quarantining, for a 10-day minimum, 675 black-tailed prairie dogs. Following veterinary inspection, we sent prairie dogs to captive breeding facilities to give ferrets an opportunity to imprint on (become familiar with) them. In the park, we posted advisory signs telling visitors of the impending reintroduction activities.

Ferret Allocation

Project biologists recommended that a minimum of 20 male and 20 female juveniles be released initially, based on known ferret

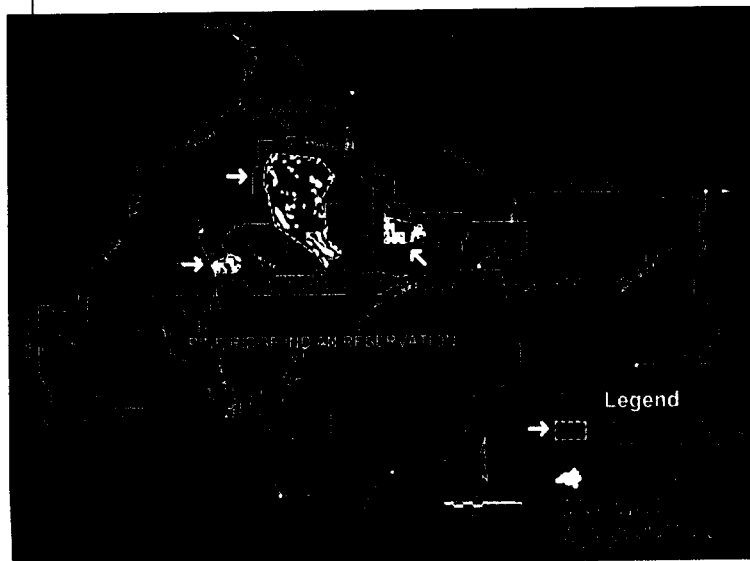


Figure 2. Black-footed ferret reintroduction sites within Badlands National Park, South Dakota.

subtle complication was the reintroduction site location within the Badlands Wilderness Area where mechanical transport is prohibited and approximately 550 bison range freely!

We stratified release sites across the three colonies based on topography, level of prairie dog activity, and potential im-

terns at Sybille Wildlife Conservation Education Center and 19 were familiar (naive) with prairie dogs, having been cage-reared at Metro Toronto and Henry Doorly Zoos. Project biologists worked with NBS scientists and veterinarians at the two zoos and the education center to fit radio-

Figure 1. In position kept well in a survival ferrets arrival

survivorship data from Wyoming and South Dakota. In July 1994, the Fish and Wildlife Service released 38 juveniles and adults with unknown ratios and we subsequently received 32 juveniles (male:12 female) and three-year-old adults (male:2 female). Of these, 19 were imprinted on live prairie dogs and burrows.



Figure 3. Large enough to hold a radio collar, a briefly anesthetized ferret, gets a custom fit from park staff at Badlands reintroduction site. Other ferrets received collars at zoos before their release.



Figure 4. Reintroduction staff, carrying ferrets and other supplies, begin a 3-mile hike to the release sites. A minor complication of the reintroduction was the prohibited use of mechanical transport means in delivering materials to the wilderness area release site.

Figure 5. Inside a bison exclosure, staff prepare a typical nest box, including food tube and underground vault (not shown), for black-footed ferret habitation. Corrugated tubing simulated prairie dog burrows and connected the underground vault to the cage above.

collars on 16 ferrets (fig. 3). Upon arrival at the park, staff backpacked ferrets directly to their preselected release cages (fig. 4). The park encouraged local men to cover the arrival of the ferrets.

Animal Husbandry

The captive-bred ferrets used in the reintroduction came from two different backgrounds relative to their familiarity with prairie dogs, and this necessitated we use two different release strategies accordingly. We held the naive animals in release cages for a minimum of 14 days with a minimum 5-day post-release cage-attending period (soft release) to permit them to return to the cages for scheduled meals. We held preconditioned animals in a release cage for a maximum of 48 hours with no post-release cage attending (semihard release).

All cages included a single nest box (aboveground), food tube, water bowl, and double-sided nest box located in an underground vault and connected to the aboveground cage by 4-in diameter corrugated plastic tubing (fig. 5). Staff examined the ferrets, attended the cages, and collected data on food consumption, ferret and radio collar condition, vault and ground temperature, and weather (temperature, precipitation, air pressure, wind speed). We fed the ferrets approximately 150 g (grams, or 0.4 lb) of black-tailed prairie dog daily.

Cage attendants released the ferrets near sunset by placing a length of 4-in diameter plastic tubing between the cage and nearest active prairie dog burrow (fig. 1, page 1). Although they immediately left the site, attendants reported seeing

two ferrets exit the release tube and go directly down a burrow.

Monitoring

Late-summer and early-fall ground temperatures in the Conata Basin-Badlands were hot, reaching over 100° F and averaging 90° F during September. Belowground vaults averaged 75° F during September afternoons and greatly improved conditions for the ferrets during the prerelease phase. In October, the underground vault and aboveground nest box temperatures dropped to a 52° F average.

Badlands National Park operated nighttime aerial telemetric missions along with NBS assistance in telemetry use, training, and study design. Altogether,

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