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RESTORATION OF THE BLACK-FOOTED FERRET IN THE NATIONAL PARK SERVICE (UPDATED)

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Background

The black-footed ferret (*Mustela nigripes*) is among the most critically endangered mammals in North America. The historic range of the black-footed ferret, the only ferret species native to North America, extends from Saskatchewan and Alberta, Canada, southward to Mexico through the Great Plains states and New Mexico and Arizona. Living as long as 4 years in the wild, the solitary territorial black-footed ferret uses prairie dog (*Cynomys* sp.) burrows for shelter while preying almost exclusively on prairie dogs. Juvenile mortality varies and often exceeds 60%, resulting in a 2:1 female:male adult ratio. The black-footed ferret is an obligate of the prairie dog, and its decline to near-extinction in the wild presaged the continuing rangewide extirpation of prairie dogs to levels of less than 2% of the historic extent. The last known black-footed ferret populations were discovered in South Dakota (1964) and Wyoming (1981). When plague and canine distemper drove the Wyoming population to near extinction during 1985-87, 18 animals were captured to initiate a captive breeding program.

Captive breeding of the black-footed ferret began with seven breeding animals of uncertain lineage and rendered more than 350 individuals. These animals are the species' essential population and are located in seven zoos and breeding facilities. The goal of captive breeding is the maintenance of 80% of the genetic diversity of founders for more than 200 years. Invariably, management of the captive population produces individuals with higher inbreeding coefficients. The number of these genetically redundant individuals is greater than needed to replace loss of breeding animals in captivity, and the animals therefore become available for reintroduction into the wild. Annually, the U.S. Fish and Wildlife Service evaluates the status of the captive population and allocates candidates for reintroduction.

Reintroduction

The current objective of the National Recovery Plan of the black-footed ferret is the re-establishment of at least 10 free-ranging populations of 1,500 breeding animals in the species' former range by 2010. Since 1991, five non-essential Experimental Popu-

lation Areas (Shirley Basin, Wyoming; Conata Basin/ Badlands, South Dakota; Phillips County, Montana; the Aubrey Valley, Arizona; and Northwestern Colorado) have been designated by the Secretary of the Interior through special rule amendments to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq, Pub. L. 93-205).

The Conata Basin/Badlands Experimental Population Area encompasses 478,500 ha that include Badlands National Park, portions of the Buffalo Gap National Grassland of the U.S. Forest Service, the Pine Ridge Reservation, and private lands. In this experimental population area, a reintroduction area of 17,000 ha on lands of the National Park Service and the U.S. Forest Service includes 3,240 ha of a prairie dog colonies. The habitat in the reintroduction area can ultimately support about 150 breeding black-footed ferrets.

Reintroduction management in the Conata Basin/Badlands area has varied from a 10-day on-site acclimation period (soft release) to an immediate (hard) release when the animals ar-

rived. Additional on-site preconditioning of ferrets prior to hard release into the wild has been an adaptive management tool of recent success. Management of the associated predator guild in the park to facilitate transition of the ferrets to the wild has included surrounding entire prairie dog colonies with an electric net-fence enclosure (originally developed to reduce livestock predation), live-trapping great horned owls (*Bubo virginianus*), and selective taking of predators known to frequent reintroduction sites or harass ferrets.

Juvenile black-footed ferrets are about 90-120 days old when they are brought to reintroduction areas. They are either cage-reared and have had no prior exposure to prairie dog burrows and live prey, or they are preconditioned by having had as many as 90 days of exposure to prairie dogs burrows and live prey. Preconditioned 3-5 year old adult black-footed ferrets have also been allocated for release. Since fall of 1994, 288 juvenile and 36 adult black-footed ferrets have been reintroduced in the Conata Basin/Badlands area.

Program Status

After reintroduction, the growth of black-footed ferret populations is principally dependent on female survivorship and fecundity. In the Conata Basin/Badlands area, at least 39% of the reintroduced preconditioned juvenile females reach breeding yearling status, and a minimum of 88% of them rear litters. These rates are slightly

above those of a free-ranging wild population. During summer 1998, twenty-five litters were detected from preconditioned candidates that were reintroduced in 1996 and 1997 and from yearlings that were wildborn in 1997. Conversely, adult or cage-reared animals have not been observed to rear litters and contribute to population growth. Although short-term, post-release survivorship is greater of preconditioned juvenile males (25%) than of cage-reared males (12%), surviving males are sufficiently distributed across the reintro-



duction landscape to ensure recruitment into the population. At present, a small, growing black-footed ferret population in the Conata Basin/Badlands area includes an estimated 120 - 130 breeding adults. Reintroductions are expected to continue through 1999. Although this population exceeds the viability threshold (>50 breeding adults), it still remains at critical risk to local extinction from the myriad threats that face small populations.

Continuation of Program

National parks play an extremely valuable and important role in the preser-

vation and restoration of many species of wildlife. As one of three major federal agencies cooperating in the re-introduction of black-footed ferrets in the Conata Basin/Badlands area, the National Park Service committed more than 6 years of Natural Resource Preservation Program funding, amounting to more than 50% of the total costs associated with the reintroduction. The continuation of this program and its contribution to the recovery and subsequent delisting of this endangered species, requires the commitment of long-term population inventory and monitoring, habitat management, disease studies, and further investigation of the relation among prairie dogs, black-footed ferrets, and vegetation.

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