Journal of the Washington Academy of Sciences,
Volume 77, Number 4, Pages 168–173, December 1987

Restoring Balance Between the Endangered Black-Footed Ferret (*Mustela nigripes*) and Human Use of the Great Plains and Intermountain West

Dr. Tim W. Clark

President, Northern Rockies Conservation Cooperative, Box 2705, Jackson, WY 83001

ABSTRACT

The ferret is our most endangered mammal. Conservation work has focused on restoring the species to healthy numbers in many secure populations. Ferrets were directly and indirectly reduced from a 100 million acre range in about 1910 to less than 7,000 acres by 1981 (99.9+% reduction) by habitat loss and possibly other factors. Recent work (1981–1986) near Meeteetse, Wyoming, the site of the only known wild population, and searches elsewhere for more ferrets are described. The small Meeteetse population (peak number 129 in 1984) suffered a catastrophic die-off in 1985 from disease. The last 18 ferrets were taken into captivity for breeding. In 1987, two litters were born. Several sites to return ferrets to the wild are being prepared. There is every reason to believe ferrets will eventually be recovered, thus restoring the balance between this species and human uses of the Great Plains and the intermountain West.

Introduction

Discovery of the small black-footed ferret (*Mustela nigripes*) (Figure 1) population near Meeteetse, Wyoming, in late September, 1981, brought the prospect that this critically endangered mammal could be recovered and restored to healthy numbers. By late 1983, there was almost a promise of a successful conservation story, a textbook case, for a species feared extinct was rediscovered, to be followed by very careful conservation research, successful captive breeding, and finally the progeny reintroduced to the wild in several secure preserves.[1,2] First, however, captive breeding was delayed. Next, the wild Meeteetse population was decimated in 1985. In 1985, 1986, and 1987, the last 18 wild ferrets were captured and serve as the nuclear breeding population for recovery of the species. The fate of the species now depends on the few captive ferrets.[3]

Ferret History and Searches

Ferrets formerly occupied all or parts of 12 states and 2 Canadian provinces and became the unintended victim of habitat loss as prairie dogs, their chief food source, were destroyed by wholesale poisoning which began in the 1880's and continues to the present. Not only were ferrets killed directly, but fragmentation of their habitat made survivors more susceptible to random catastrophes, such as accidents, disease, and so on, that accelerated extinction. The ferret's historic range included over 100 million acres, but by the late 1940's not a single ferret could be found. Only one small population was ever studied between the time the species was first described by John Audubon and John Bachman in 1851 and discovery of the Meeteetse ferrets in 1981. In 1964, a ferret family was found in southcentral South Dakota and over the next 11 years, 10 other litters and about 90 different individuals were found. After 1974, no ferrets could be located. A captive breeding program came too late, using the last 9 ferrets seen there. The captive rearing program provided much needed information, however, on how to house and breed ferrets. It also demonstrated that ferrets are susceptible to canine distemper when several ferrets died of the disease. The South Dakota field studies and laboratory efforts provided the badly needed outline of ferret life history for the first time. With the apparent extinction of the South Dakota Ferret population, many people and agencies feared the species extinct. As a result, efforts to locate more ferrets nearby came to a standstill over the next 7 years.

Despite this, my colleagues and I never gave up hope of finding ferrets and continued looking year after year. When the first Meeteetse ferret turned up, killed by a ranch dog in a rancher's front yard, both the rancher and state officials invited me to visit. Also involved were several state and federal agencies, all charged under

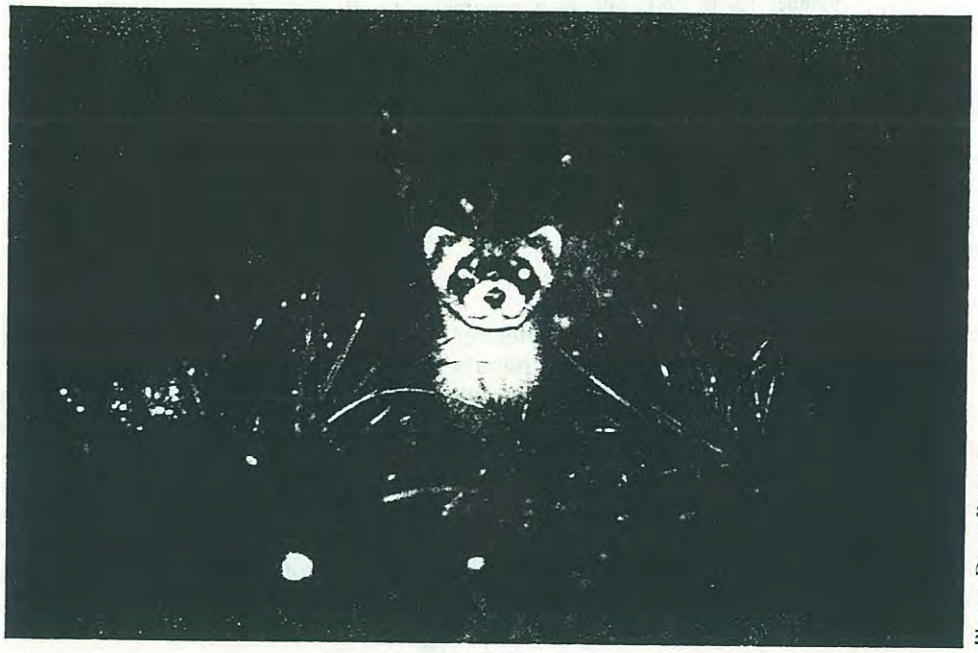

Photo: Doug Brown

Fig. 1. Black-footed ferret peering out of prairie dog hole at night. This same endangered species appears on a U.S. Postal Service 22 cent stamp currently in circulation.

various laws with saving ferrets and their habitats and other endangered species—Wyoming Game and Fish Department, U.S. Fish and Wildlife Service, Bureau of Land Management, and U.S. Forest Service. Several ranchers were also involved. Besides this set of organizations, my independent studies were endorsed and supported by Wildlife Preservation Trust International, New York Zoological Society (Wildlife Conservation International), World Wildlife Fund-U.S., National Geographic Society, Charles A. Lindbergh Fund, The Nature Conservancy, National Wildlife Federation, Chicago Zoological Society, and others. My colleagues and I volunteered all of our time over the next 4.5 years while these conservation organizations covered field expenses. Our field work on ferrets was conducted year-round, through cold winter days and long summer nights, between 1981 and 1986.

Saving Ferrets: A Plan

My vision of ferret conservation and recovery in 1981 was straightforward. Because the ferret was recognized both nationally and internationally as a critically endangered species, and because so many universities, conservation organizations, state and federal agencies, and local people were interested and available, I expected that a large range of resources—financial, personnel, experience, information, and facilities—would be available to maximize chances of saving ferrets. The talent available included national and international expertise in population genetics, management of small populations, experienced field researchers; extant land and wildlife laws, policies (Endangered Species Act), and various programs; and well-tested breeding facilities, with extensive support staffs, at several major zoos and research facilities. This was all that was needed.

The first step in ferret conservation, as I saw it, was to acquire key information about the "health" of the Meeteetse ferret population and to continue searching for other ferrets near Meeteetse and in other areas and states using new survey techniques we would develop at Meeteetse. Learning about the Meeteetse ferrets would require a sensitive research program. All the methods my colleagues and I proposed were indirect and did not require handling ferrets. Ideally, the Meeteetse ferret population would show a "surplus" of young early each fall after only 2 or at most 3 years, and our study plans reflected this. The surplus ferrets could be captured each fall, used in several captive breeding programs using existing facilities, experience, and personnel, and the offspring could be reintroduced to the wild throughout their former range, thereby establishing many secure, self-sustaining wild populations. Under this scenario, ferrets could be well on the road to full recovery in 5+ years from the date they were first located. In the meantime, searches for more ferrets and for reintroduction sites would accelerate species recovery. Simultaneously, all the necessary active management protection of the wild Meeteetse ferrets (and any other ferret populations found) would be forthcoming, including disease monitoring, possible predator control, and land protection. My colleagues and I went to the field work right away, attempting to do our part for ferret conservation.

My recovery model had two major goals: conservation of the Meeteetse ferrets and their habitat and recovery of the species. My plan addressed several basic questions, first determining the health of the Meeteetse ferrets, accompanied by goals, specific objectives, timetables, and expected results. I believed all along that the Meeteetse ferrets held the key to recovery of the species. A close working relationship based on trust with ranchers of the Meeteetse region and with other interested parties was essential. In 1981 and again in 1982, I outlined a plan

whereby the various organizations and research efforts could be woven into a cooperative, well-integrated program to meet this conservation task. It was designed so that ferrets as well as all the organizations, agencies, and individuals would "win."

Studying the Meeteetse Ferrets

We learned many details of ferret behavior and ecology. The ferrets were, in fact, producing a "surplus" of young each year, captive breeding facilities were available, and sites to return ferrets to the wild were located. Ever since the 1870's, ferrets had been known to associate with prairie dogs (*Cynomys* spp.); ferrets eat prairie dogs and use their burrows for shelter and sites to rear young. At Meeteetse we found ferrets on 37 white-tailed prairie dog colonies totalling about 8,000 acres in over 100 square miles. The largest colony of 3,500 acres contained two-thirds of all the ferrets. Clumped around this large colony within 3 miles were 10 other large colonies. Nearly all the ferrets were found in this dense clump of colonies about a township in size. Beyond these 37 colonies, prairie dogs were scarce for miles. It was obvious that the 37 colonies were an "island" of ferret habitat, beyond which dispersing ferrets stood little chance of survival. This meant there was little chance that ferrets would ever recolonize those prairie dog colonies 30+ miles away by themselves. Indeed, we repeatedly searched, but never found ferrets outside the 37-colony "island." The Meeteetse ferrets occurred at about 1 ferret/125 acres of prairie dogs. Snow tracking ferrets over 250 times in the first 3 winters revealed much new information. It also tested our field rigor as we worked and slept out at 43 degrees below zero. We found that individuals remain within certain areas and may be active every night or inactive up to 6 days. The "average" ferret may investigate about 65 prairie dog holes in 1 mile of travel each night. In the breeding season in February and March, ferrets may travel over 5 miles per night "checking things out" and making many characteristic marks and scrapes in the snow. Within the 37 colonies, 15 ferrets were observed to travel between individual colonies. These 37 colonies were equally owned by private ranchers, the state of Wyoming, and the U.S. government (Bureau of Land Management).

In all, we saw at least 275 different ferrets. Between 1982 and 1985, we found 68 litters averaging 3.3 young. The population was comprised of about 67% juveniles and 33% adults each August. Sex ratios showed 1 male:1 female for juveniles and 0.4 male:1 female in adults. Ferret numbers varied dramatically, with the seasons and years. Our best data was from the single large colony; it showed 37 ferrets in summer 1982, 46 in 1983, 65 in 1984, and 16 in 1985, all early August counts. Data from the total ferret area (keeping in mind that the 1982 count was incomplete) showed 61 ferrets in 1982, 88 in 1983, 129 in 1984, and 58 in 1985, again early August counts. In September and October of 1984 and 1985, a mark/recapture estimate of population size was made cooperatively by us, U.S. Fish and Wildlife Service, and Wyoming Game and Fish Department. It showed 128 ± 25 ferrets in 1984 and 31 ± 8 in 1985. A "back" estimate to 1983 showed 113 ± 60 ferrets present, more than our spotlighting count of 88. Ferrets seem to disappear in large numbers from the fall of one year to spring breeding of the next year. We estimated annual losses of 67+% of the total population. Juvenile losses were highest, around 85%, whereas adult losses were estimated to be about 50%. Predation from owls, hawks, eagles, coyotes, and badgers, and losses from accidents and dispersal seemed to account for the huge annual ferret mortality. This meant to us and some of our associates in the U.S. Fish and Wildlife Service that a "surplus" of Meeteetse ferrets existed to begin captive breeding. A few of the

ferrets that were lost from natural causes each fall and winter could be removed for captive rearing programs. In fact, in December, 1983, we outlined a captive breeding program, described its components, and encouraged governmental implementation of the plan.[4] Several captive breeding facilities were available and waiting for ferrets. Captive breeding was not undertaken, however.

A tragic picture of the wild ferret population emerged in 1985. By early July, 1985, our initial counts showed the ferret population was much lower than in previous years, especially given its large size of 129 the previous fall. Intensive spotlight surveys were immediately undertaken to find ferrets. At this time a volunteer for the U.S. Fish and Wildlife Service discovered sylvatic plague in the ferrets' prey—prairie dogs. Plague has been known to destroy 95+% of prairie dog populations in days or weeks. Our concern for the ferrets and the prairie dogs on which they depend sharply increased. Intensive surveys conducted largely by us and the U.S. Fish and Wildlife Service showed 58 ferrets (13 litters) in 1985 as compared to 129 ferrets (25 litters) at the same time in 1984. Many of these ferrets were seen only once, unlike our observations in past years when ferrets, once located, could be repeatedly located night after night. Mark/recapture population estimates showed only 31 ± 8 ferrets on September 10, 16 ± 5 on October 9, and 6 ± 4 on November 1, 1985. Thus, we can document the loss of about 150 ferrets between Fall, 1984 and Fall, 1985. During July to September, ferrets were dying at about one every 2–3 days. The probable cause was later diagnosed as canine distemper, always present in nature, and probably brought in by skunks, racoons, foxes, coyotes, or badgers in June, 1985 or before.

Between September 12 and October 11, 1985, 6 ferrets were live-captured from Meeteetse and placed in a Wyoming Game and Fish Department facility. On October 22, canine distemper was diagnosed when one of the captive ferrets died and another showed symptoms. All 6 ferrets were housed in the same room, and because distemper can be spread through the air, all 6 ferrets eventually died. Housing rare animals like this is contrary to standard quarantine procedures. Between October 25 and November 2, another 6 ferrets out of the dozen estimated to remain in the wild were caught, taken to Laramie, housed individually, and survive to the present. Five of these may be very closely related (first and second generation). No young were produced in captivity in 1986.

The 1986 Meeteetse summer surveys showed that 4 adults survived. Fortunately, two were females with litters (5 young each). Twelve of these were relocated and captured between August, 1986 and February, 1987. Thus, the captive population was expanded to 18. In 1987, 2 litters were born in captivity, 1 with 6 young and the other with 2 (1 of which later died). As of early summer 1987, the fate of this rare species will turn on the success of the captive population. Searches for more wild ferrets continue, and sites to reintroduce ferrets back to the wild have been located and are being prepared. Despite the setbacks and complexity of the ferret recovery effort, there is every reason to believe that it will ultimately be a success.

Much Meeteetse data has been published in various scientific journals, government bulletins, monographs, and other outlets.[5,6,7,8] In all, about 40 papers detail ferret ecology, behavior, and conservation options. Other reports have been submitted for publication and should appear in print this year.

References Cited

1. **Clark, T. W.** 1984. Strategies in endangered species conservation: a research view of the ongoing black-footed ferret conservation studies. *In*: Symposium on Issues in Technology and Management of Impacted Western Wildlife. Steamboat Springs, CO. Nov., 1982. pp. 145–154.

2. **Clark, T. W.** 1984. Biological, sociological, and organizational challenges to endangered species conservation: the black-footed ferret case. *Human Dimensions in Wildlife Newsletter* **3**:10–15.
3. **Clark, T. W.** 1985. The Meeteetse black-footed ferret conservation studies. *National Geographic Research*, **Spring**:299–302.
4. **Richardson, L., T. W. Clark, S. C. Forrest, and T. M. Campbell III.** 1986. Black-footed ferret recovery: a discussion of some options and considerations. *Great Basin Nat. Mem.* **8**:169–184.
5. **Clark, T. W.** 1986. Some guidelines for management of the black-footed ferret. *Great Basin Nat. Mem.* **8**:160–168.
6. **Clark, T. W., T. M. Campbell III, M. H. Schroeder, and L. Richardson.** 1984. Handbook of methods for locating black-footed ferrets. Wyoming Bureau of Land Management, Cheyenne, *Wildlife Tech. Bull.* **No. 1.** 55 pp.
7. **Forrest, S. C., T. W. Clark, L. Richardson, and T. M. Campbell III.** 1985. Black-footed ferret habitat: some management and reintroduction considerations. Wyoming Bureau of Land Management, Cheyenne, *Wildlife Tech. Bull.* **No. 2**:1–49.
8. **Groves, C. R., and T. W. Clark.** 1986. Determining minimum population size for recovery of the black-footed ferret. *Great Basin Nat. Mem.* **8**:150–159.