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LIFE HISTORY AND ECOLOGY OF THE BLACK-FOOTED FERRET IN THE WILD

BY

CONRAD N. HILLMAN

A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science, Major in
Wildlife Biology, South Dakota
State University

1968

LIFE HISTORY AND ECOLOGY OF THE BLACK-FOOTED FERRET

IN THE WILD

This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Wildlife Management Department

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LIFE HISTORY AND ECOLOGY OF THE BLACK-FOOTED FERRET

IN THE WILD

Abstract

CONRAD N. HILLMAN

Twenty-one black-footed ferrets (Mustela nigripes) were observed at six different locations in southwest South Dakota between April 1966, and September 1967. All observations were made on black-tailed prairie-dog (Cynomys ludovicianus) towns from 15 to 100 acres in size. Because of the proximity of towns inhabited by ferrets, it was possible that individual animals were observed in more than one location.

Three litters of ferrets were studied. Young ferrets were most active during early morning and late evening hours. Ferrets remained as a group until early fall when dispersal evidently occurred. Young ferrets accepted live-tethered and dead prairie dogs, mice, cottontails (Sylvilagus floridanus), and birds placed near their burrow.

A trench-like structure formed by ferrets digging in prairie-dog burrows was a characteristic sign indicating that ferrets were present. Numerous plugged burrows formed by prairie dogs covering holes presently or recently occupied by ferrets may also be a sign.

All evidence indicated that prairie dogs were the principal food. Adult ferrets were observed to bring up dead prairie dogs

from their burrows and carry them to other burrows. Also, one adult ferret was observed capturing a live prairie dog above ground. A reduction in prairie-dog numbers was noted on towns inhabited by ferrets.

Widespread use of sodium monofluoracetate (Compound 1080) presents a threat to ferrets. It has been shown that 1080-poisoned prairie dogs can cause secondary poisoning of domestic ferrets (*Mustela putorius*). Also, prairie-dog eradication reduces the ferret's food supply.

INTRODUCTION

The black-footed ferret (Mustela nigripes) has long been considered rare throughout much or all of its range. Although never known to exist in great numbers, the ferret originally occurred throughout the Great Plains from Texas to Canada (Burt and Grossenheider, 1964).

Many accounts suggest that distribution of the black-footed ferret is closely correlated with, if not restricted to, the distribution of black-tailed prairie dogs (Cynomys ludovicianus) and white-tailed prairie dogs (Cynomys gunnisoni). Cahalane (1954) reported that of 20 ferret sightings which described the habitat where ferrets were seen, 18 were on prairie-dog towns. Henderson et al. (1968) also reported that ferrets were most often seen on or near prairie-dog towns.

More reports of ferret sightings have been made in South Dakota than in any other state. Cahalane (op. cit.) reported that of 42 acceptable sightings, South Dakota led nine other states with 16 records. Henderson et al. (op. cit.) reported 230 records where ferrets were sighted or sign indicative of ferrets was seen. Few reports of sightings have come from other states in recent years.

A study of the black-footed ferret in the wild was initiated in August 1964 by the South Dakota Cooperative Wildlife Research

Unit. Investigations continued through 1967. The present study was initiated in April 1966, to learn more of the ferret's life history and ecological requirements.

The use of sodium monofluoracetate (Compound 1080), a poison used to control prairie dogs, has caused considerable controversy because of possible secondary poisoning of ferrets. Pen studies were conducted to evaluate the significance of prairie-dog poisoning.

DESCRIPTION OF STUDY AREA

Observations of black-footed ferrets were restricted to western Mellette County in southwest South Dakota. All ferrets observed inhabited six prairie-dog towns which varied in size from 15 to 100 acres. Five towns were on rolling grassland and one was located on low terraces adjacent to Pine Creek.

Soils in the area are derived from stream-deposited alluvium, tertiary sandstone and siltstones, and Pierre shale. Soils are mainly solodized-solonetz with a thin friable surface layer underlain by a dense, dispersed clay layer. The grayish-brown clay, silt loams, and sandy loam soils are well to excessively drained. Annual rainfall averages 16 inches. Annual temperatures are 45-48 F. (Westin et al., 1959).

Vegetation on dog towns was composed of forbs, mid- and short-grass species. Grass species include western wheatgrass (Agropyron Smithii), green needlegrass (Stipa viridula), sand dropseed (Sporobolus cryptandrus), blue grama (Bouteloua gracilis) and buffalo grass (Buchloe dactyloides). In disturbed sites where prairie-dog activity was greatest, prickly pear (Opuntia spp.), red three-awn (Aristida longiseta), tumblegrass (Schedonnardus paniculatus), curlycup-gumweed (Grindelia squarrosa) and wooly plantain (Plantago Purshii) were commonly found. Scientific names of vegetation are according to Fernald (1950).

The vegetation in prairie-dog towns is usually low in vigor due to heavy grazing pressure by prairie dogs and often by cattle which tend to concentrate on towns. Most of the area surrounding the prairie-dog burrows was barren of vegetation in late summer. Prairie dogs were continually modifying their burrow and in doing so they pulled soil from as far as 15 feet (Figure 1).

Two prairie-dog towns under observation, each approximately 80-100 acres in size, were inhabited by ferret litters in 1966 and 1967. The town inhabited by ferrets in 1966 had a total of 115 prairie dogs, young and old, on July 13. The town inhabited by ferrets in 1967 had 153 prairie dogs on June 21. A third litter was seen in 1967 on a 30-acre prairie-dog town but accurate dog counts could not be made.

Prairie-dog towns inhabited by individual ferrets varied in size from 20-35 acres. Eighteen prairie dogs were observed in one 20-acre town, but this town was heavily hunted by local ranchers. A total of 64 dogs was observed on a 25-acre town, and on a 35-acre town the greatest number of prairie dogs observed was 52.

Prairie-dog towns were distributed throughout the western half of Mellette County. Towns were located on private land and land under jurisdiction of the U. S. Bureau of Indian Affairs. Eleven prairie-dog towns were known to occur per township in some areas. Other areas had only one or two towns per township.

Figure 1. Soil surrounding prairie-dog burrows is often disturbed.

Figure 2. Ferrets were observed at night by use of a spotlight.

METHODS

Field Observations

Location of prairie-dog towns was determined by aerial and ground surveys. Personal communication with local ranchers and mammal-control agents also provided information concerning location, size and past history of prairie-dog towns.

Prairie-dog towns were surveyed for ferrets from April 1966, through December 1967. Intensive observations were made during summer months, and fewer observations were made during other seasons of the year.

Ferrets were observed at night by use of a spotlight (Figure 2). Their eyes appeared bright green and could often be seen up to 200 yards. They appeared unalarmed by either a light or vehicle and paid little attention to the observer. Ferrets were most readily detected during daylight hours by using a spotting scope or binoculars.

Secondary Poisoning of Domestic Ferrets

Prairie dogs were obtained from an area zoo and domestic ferrets (*Mustela putorius*) were provided by commercial raisers. Bait treated with sodium monofluoracetate was furnished by the cooperative bait-mixing station at Mitchell, South Dakota, operated by the Bureau of Sport Fisheries and Wildlife.

Food was withheld for three days from 11 prairie dogs prior to introduction of poisoned bait. Viscera was removed from each dog and weights obtained of each viscera and eviscerated carcass.

Two ferrets were twice fed poisoned, eviscerated prairie dogs and allowed sufficient time to consume major portions of the carcass. Viscera were later fed to these ferrets. Control ferrets were fed unpoisoned prairie dogs in a similar manner. Following termination of the experiment, control animals were fed viscera of poisoned dogs.

Life history and behavior were studied by observing a captive domestic ferret. The ferret was fed a diet of mink food, small mammals and birds.

RESULTS AND DISCUSSION

Twenty-one ferrets were observed; 13 were young and 8 were presumed to be adults. One litter of five young (litter 1) was seen in 1966 and two with four young each (litters 2 and 3) in 1967.

All ferrets observed during the study were on prairie-dog towns within a radius of ten miles. Prairie-dog towns where ferrets were not seen existed within four miles of towns inhabited by ferrets (Figure 3). Because of the proximity of towns inhabited by ferrets, it is possible that individual animals were observed in more than one location.

Young in litter 1, when first seen on July 12, appeared three-fourths the size of the adult female, and by late August had attained adult size. Young ferrets closely resembled the adult, but their mask and feet were not as dark. The adult female appeared thin and unkempt.

Young in litter 2, when first seen in early July, appeared one-third the size of the adult female. They also closely resembled the adult except for a lighter mask and feet. Young in litter 3 appeared adult in size when first observed in early August. Little data were gathered from these ferrets as litter 2 was under intensive observation at that time.

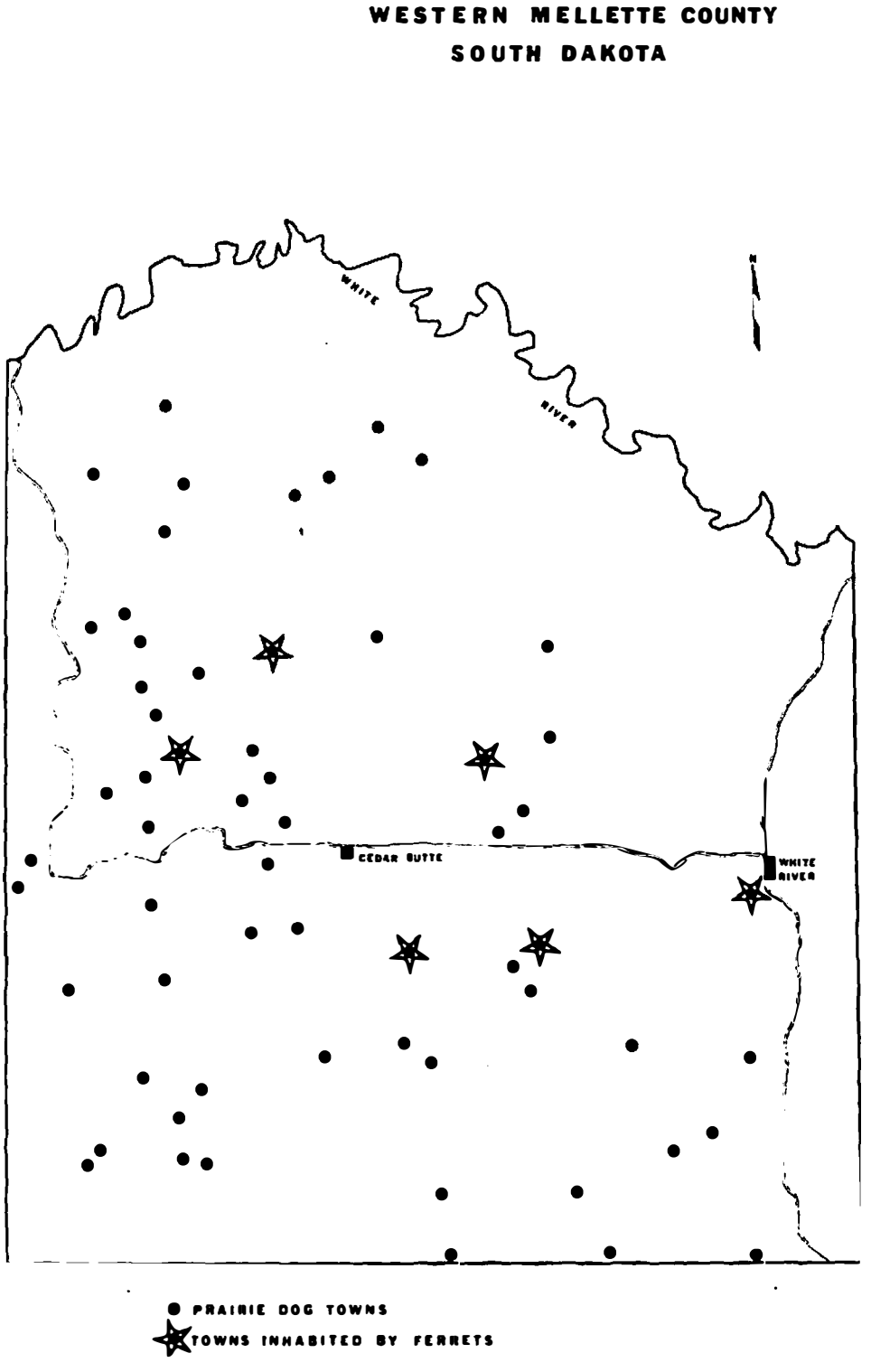

Figure 3. Prairie-dog towns in western Mellette County, South Dakota.

External sex organs provided the only reliable means of sex identification. A dark, ventral line running from behind the back legs to the penis was more pronounced in male ferrets but occurred in females. This line was observed in the field when ferrets stood on their hind legs.

Seasonal and Daily Activity Patterns

Twenty-one ferrets were observed from April through November, 1966 and 1967. None were observed from December through March, but hours of observation were few compared to those spent during the summer. Sign indicative of ferret activity was, however, seen frequently during winter months. Ferrets were most active during early morning and late evening (Table 1 and Figure 4).

Climatic factors did not appear to limit ferret activity. Ferrets were observed at air temperatures below 0 F and above 100 F. Wind did not appear to affect activity since ferrets were active during 25-30 mile-per-hour winds. Although little time was spent on prairie-dog towns during rainy periods, one ferret was seen during a rain shower.

Behavior of Mother and Young

Young ferrets were never seen until early July when the adult female brought them above ground. She held the young in her mouth by the nape of their neck and backed out of the burrow. She would

Table 1. Ferret observations in Mellette County, South Dakota.

Time	No. of observations	Hours spent observing dog-towns inhabited by ferrets	Hours ferrets were observed
p.m.			
12m-2	2	46	0.3
2-4	1	28	0.5
4-6	-	27	-
6-8	-	42	-
8-10	19	73	16.9
10-12	41	109	23.9
a.m.			
12-2	27	86	17.0
2-4	10	76	6.3
4-6	17	118	11.8
6-8	46	172	35.9
8-10	36	146	22.9
10-12m	14	102	8.8

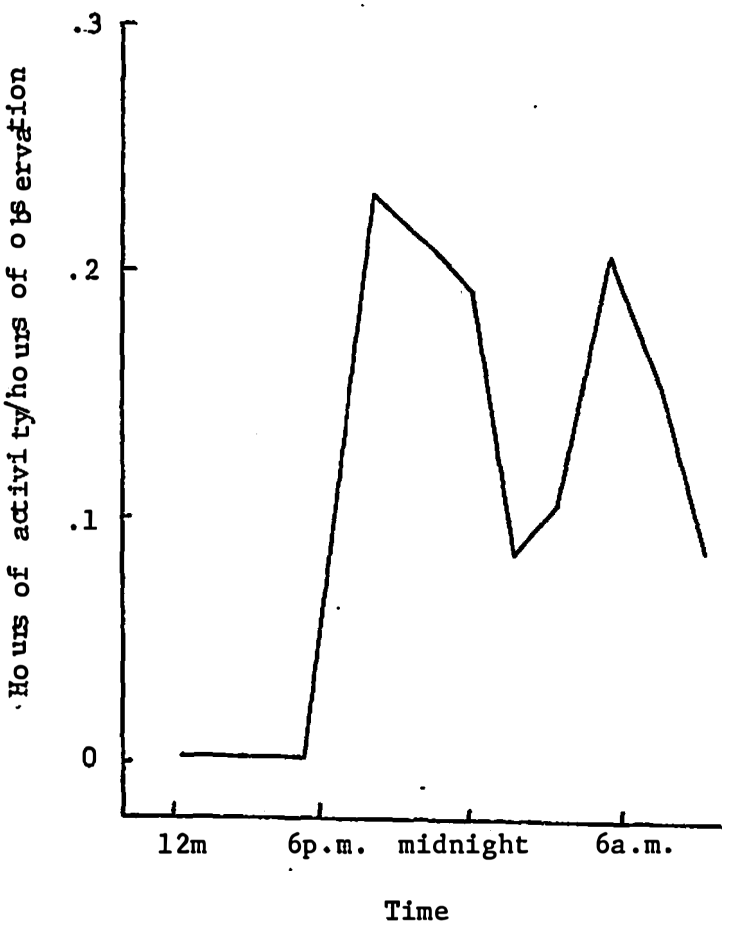

Figure 4. Daily activity of ferrets during summer months.

then carry it to another burrow and return for remaining young. As the young grew older, she no longer carried them but pulled them away one at a time from the burrow entrance and led them in single file over the dog town. When young ferrets were aware of an observer, they were reluctant to leave the burrow entrance. They would join the adult female, in such an instance, only after much coaxing.

When first observed, eyes of young in litter 2 were only partially opened and it seemed that they followed the adult female by sound. She would descend the burrow occupied by her young and upon reappearing would utter a low, whimpering sound, apparently signaling the young to follow. Sense of hearing seemed very acute at close range. However, ferrets paid little heed to loud noises or the banging of a car door at greater distances.

One young was carried by its mother to a burrow ten feet from where I was sitting. She left the young at the burrow entrance and returned to the burrow occupied by the remaining young. As I walked away, the young ferret followed, stopping only when I stopped. The adult returned and I moved so that she was between me and the young ferret. She then picked it up and carried it to another burrow. Returning to within four feet of me, she hissed and snarled in an attempt to drive me away.

Even though young ferrets were inquisitive, they seldom ventured more than a few feet from their burrow. Young ferrets were

not particularly wary of humans or livestock and could often be approached within 5 feet before they went down their burrow. They often remained at the entrance and hissed or gave a bark closely resembling that of a prairie dog. When I approached adult ferrets, they remained above ground, descending only when the distance between us was a few feet.

Ferrets seemed to rely on their sense of smell to a large extent and often raised their nose to scent the air. The adult, when carrying her young from one burrow to another, always followed the same zigzag course that she traveled when she moved the first one of the litter. Once, when a vehicle was parked to intercept her travel, she passed under the vehicle when carrying her young to another burrow.

Young often played above ground, running in and out of burrows in pursuit of one another. They bit and pulled at each other, humped their backs, and ran on their toes. They scratched themselves frequently, often turning in circles attempting to bite their tail. Often they were seen chasing flies attracted to their burrow. When approached by the mother, they playfully jumped and bit at her.

No attempt by young to nurse the adult female was observed. Only in early mornings and during some nights was she observed to stay with her young. Other times she occupied different burrows in the vicinity.

Families frequented all portions of prairie-dog towns. Some burrows were utilized more than others, particularly before young were moving about on their own, but none appeared to be a permanent den.

Young ferrets most often occupied one burrow in early July. As the season progressed they were located separately throughout the prairie-dog towns. The mother would go to each burrow occupied by her young and they would follow as she traveled over the town. Most often the ferrets would reappear from the same burrow they had gone down, but on several occasions, where prairie-dog burrows were close together, the ferrets would emerge from a different burrow.

One ferret in litter 1 was considerably larger than the rest. In litter 2, two ferrets appeared larger than the others. These larger individuals, believed to be males, were more active above ground than were the smaller ones. They were more aggressive and readily followed the adult, while the smaller ones were hesitant to leave the burrow. One of the larger young attempted to mount the adult female on August 18, 1967, but was unsuccessful.

Behavior of Individuals

Two different adult ferrets were first observed in a 35-acre prairie-dog town on May 2, 1966. Subsequent observations revealed at least one remained on the town until October. It is believed every observation after May 4 was of the same animal as distinguishing

markings and scars were seen on its head and neck. There was no evidence of a litter on this town.

A light-colored male ferret, probably an adult, was first observed on the prairie-dog town inhabited by litter 1 on August 25, 1966. He was approximately one and one-half times larger than the adult female. On only one occasion were the adult ferrets observed in the near vicinity of one another. Other observations revealed adults in separate areas of the prairie-dog town. Young ferrets were not seen on the town after August 29, and neither adult ferret was seen after September 3, 1966. However, in August 1967, a ferret was observed on this town on one occasion.

Two ferrets inhabiting separate prairie-dog towns were observed in October and November of 1966. These ferrets displayed little activity and remained close to the burrows where they were first observed. Their sex or age could not be determined, and it is not known how long they inhabited the prairie-dog towns prior to initial observation. No ferrets were observed on these prairie-dog towns during summer 1967.

Individual adult animals were unpredictable in their actions and did not exhibit fixed patterns of activity. Unlike the young, they were active above ground during all hours except mid-afternoon.

Adult ferrets were often seen sunning themselves, especially during early-morning hours. They lay beside a burrow entrance and occasionally looked into the hole, but most often remained motionless.

They would rest with their eyes closed, but when a prairie dog barked or a bird flew near, they became very alert. Henderson et al. (op. cit.) stated that ferrets frequently were seen sunning themselves and Progulske (op. cit.) noted that a captive ferret frequently lay outside even during winter.

Movement and Dispersion

The young ferrets no longer seemed to be dependent upon the adult female by late August and early September. It was assumed the young left the prairie-dog towns at that time as they were never seen there again. Henderson et al. (op. cit.) reported that ferret sightings occurred most often in early fall and that general movements probably occurred at that time.

Infrequent observations of adult animals on a prairie-dog town under intensive surveillance indicated they may have left the prairie-dog town for varying periods of time. During a 6 week period from May 25 to July 4, 1966, observations were made on 24 days, but ferrets were seen on only two occasions.

Food Habits and Feeding Behavior

Field observations indicated that ferrets fed entirely on prairie dogs, but thirteen-lined ground squirrels (*Citellus tridecemlineatus*), pocket gophers (*Geomys bursarius*), deer mice (*Peromyscus* spp.), and cottontail rabbits (*Sylvilagus floridanus*), as well as upland plovers

(Bartramia lingicauda), horned larks (Eremophila alpestris), and western meadowlarks (Sturnella neglecta) were potential prey of ferrets. Ferret scats were found infrequently and it is assumed the animals defecated underground. Two scats that were found were composed of only prairie-dog hair and bones. Ferrets were never observed preying on animals other than prairie dogs except those made available for experimental studies.

Young ferrets readily took both live-tethered and dead prairie dogs, thirteen-lined ground squirrels, cottontail rabbits, mice and birds placed near their burrows. Young ferrets approached live-tethered prairie dogs cautiously, sniffed them and then grabbed them quickly on the side of the neck before pulling them down a burrow. If prairie dogs were so securely staked that ferrets were unable to pull them down the burrow, they would not consume any part of the dog until the observer had left the prairie-dog town. Tethered prairie dogs displayed little defiance or fear of the ferrets, and only occasionally moved away when approached.

Adult ferrets were seen to descend burrows, emerge with dead prairie dogs which they had presumably killed and then carry them to another burrow.

The adult ferret inhabiting the 35-acre prairie-dog town was seen twice during June 1966, and both times killed young prairie dogs. The ferret lay 20 feet from a burrow which contained a

litter of prairie dogs. When an adult prairie dog emerged, the ferret went down and returned within 3 minutes with a young dog, and carried it to another burrow. The ferret eventually took six young dogs in this manner from one burrow.

A ferret descended a burrow on July 27, 1966, at 6:40 a.m., brought up an adult prairie dog and carried it 60 feet to a burrow occupied by litter 1. The ferret had difficulty in carrying the dog and dragged it most of the way, occasionally leaving it to inspect a nearby burrow.

An adult female descended a burrow in which she had been digging and brought up three young prairie dogs on July 10, 1967, at 11:00 p.m. She carried them singly to another burrow after which she rejoined her young (litter 2). The following night she moved her young to the burrow where she had taken the three dead prairie dogs. The young ferrets remained in that burrow for three days.

On June 28, 1967, an adult ferret descended and remained in a burrow for 35 minutes. Upon emerging, it pulled a large, adult, male prairie dog, which was bleeding at the throat, out of the hole and carried it to another burrow 15 feet away. The ferret seemed to have difficulty in carrying this large prairie dog, as it would stop and rest about every 5 feet. Eventually the ferret left the prairie dog near a burrow and did not return. It is not known whether the observer caused the ferret to abandon the dead dog.

Only once was a ferret seen to capture a prairie dog aboveground. On September 8, 1967, at 9:15 a.m., an adult female emerged from a burrow and ran towards another burrow where three prairie dogs were standing near the entrance. As the ferret approached, two dogs quickly ran off, but the ferret grabbed the third by the side of the neck and attempted to pull it down the burrow. As the ferret backed down the burrow, the prairie dog braced its feet against the entrance. The ferret pulled the dog down after a 2-minute struggle. The ferret reappeared 20 minutes later, looked about for 1 minute and then went down the burrow again.

Effects of Predation on Prairie-dog Populations

Effects of ferrets on prairie-dog populations depend on size of the prairie-dog town and number of ferrets inhabiting it. Prairie dogs in towns inhabited by litters of ferrets appeared to decrease in number. Portions of towns often frequented by ferrets were thinly populated with prairie dogs, while portions only occasionally visited by the ferrets had higher densities. Because some of these towns were heavily shot by local ranchers, no quantitative measure of the extent to which ferrets preyed on prairie dogs was available.

The greatest number of prairie dogs observed on a town inhabited by a single adult ferret was 28 adults and 24 young in June 1966. By November, only 36 dogs remained on that town. No prairie dogs were shot and because of the town's small size the counts of dogs are

believed accurate. It is not known how long the ferret inhabited this town prior to the initial observation in May 1966. Coyotes (Canis latrans), badgers (Taxidea taxus) and rattlesnakes (Crotalus viridus) are predators which frequented the prairie-dog town and may have contributed to population decline in prairie dogs.

Behavioral Responses of Prairie Dogs to Ferrets

Observations were made of adult prairie dogs displaying aggressive behavior toward ferrets, particularly when ferrets approached a burrow known to contain young prairie dogs. Prairie dogs would follow ferrets closely, often coming within inches when a ferret stopped at a hole. They often ran in front of ferrets and attempted to change their course of travel.

A ferret, which was being followed closely by a large prairie dog, turned and grabbed the prairie dog by the back of its neck and threw it about 3 feet. The prairie dog barked loudly and continued to chase the ferret which eventually went down a hole occupied by another prairie dog. On another occasion, an adult prairie dog came in direct contact with the ferret and caused it to drop the young dog it was carrying. The ferret chased the offending prairie dog for a short distance, then returned and picked up the dead dog.

Adult prairie dogs often attempted to cover burrows from which a ferret took young dogs, burrows into which the ferret disappeared with dead dogs, and burrows occupied by ferrets. If there were young prairie dogs in the covered burrow, adult dogs would uncover it later in the day. Ferrets appeared to have no difficulty in uncovering plugged burrows, either from below or above ground.

Ferret Sign

Sign indicative of ferret activity was usually observed before a ferret was seen, but ferrets did not always leave observable sign. A trench-like structure formed by a ferret digging in prairie-dog burrows, as described by Henderson et al. (op. cit.), indicated that ferrets were present. These trenches varied somewhat in appearance and were from 2 to 10 feet in length (Figure 5). After descending a burrow, ferrets backed out, pulling dirt away from the entrance with their front feet and kicking dirt with their hind legs. The trench or depression was formed as the ferret pulled the dirt farther away in the same path each time. Occasionally a trench was not formed, but dirt was scattered in all directions. Except on one occasion, ferrets were seen to dig only at night.

Fresh diggings, seen early in the morning before prairie dogs were active, were a reliable indicator of ferret activity (Figure 6). Numerous plugged burrows on a prairie-dog town might also indicate the presence of ferrets. However, Tileston and Lechleitner (1966)

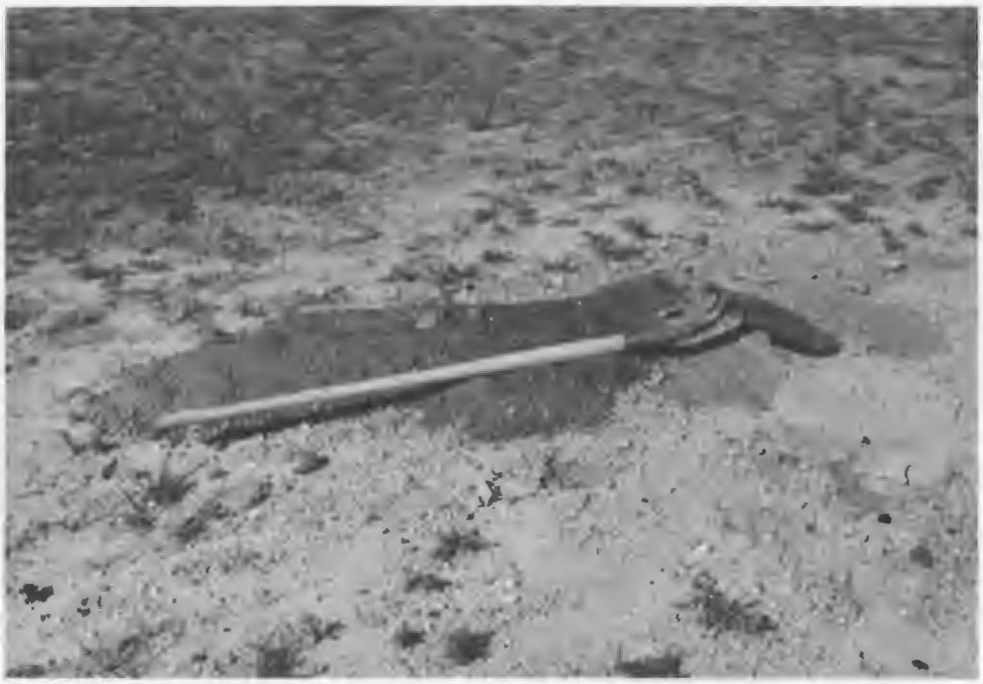

Figure 5. Trench-like structure formed by a ferret digging in a prairie-dog burrow.

Figure 6. Fresh diggings were sign of ferret activity.

reported that black-tailed prairie dogs spent considerable time closing some burrows with plugs of earth, opening previously-plugged entrances and repairing and modifying existing mounds. Thus, the existence of plugged burrows, when no other sign was evident, would not provide a reliable indicator of ferret activity.

When prairie dogs covered holes occupied or used by a ferret in summer, signs of trenching were usually destroyed the day after they were made. During winter months prairie dogs were less active and the soil was frozen; therefore, trenches persisted for a considerable length of time.

Fresh digging and ferret tracks were often observed in the snow. Distance between tracks was 14 to 17 inches when the animal was bounding and 6 to 8 inches when walking. Mink (*Mustela vison*) have been observed on prairie-dog towns, and since their tracks closely resemble those of ferrets, identification by tracks may not be accurate.

Welfare Factors

Potential predators observed on prairie-dog towns include badgers, coyotes, prairie rattlesnakes, bobcats (*Lynx rufus*), golden eagles (*Aquila chrysaetos*), ferruginous hawks (*Buteo lagopus*) and great horned owls (*Bubo virginianus*). A great horned owl swooped at an adult ferret in one instance, but the ferret escaped down a

burrow. Badgers were seen to dig in burrows previously used but not currently occupied by ferrets. Sperry (1941) found the remains of ferrets in three coyote stomachs. No predation upon ferrets was observed during this study.

Ticks of an unknown species were often observed on the adult ferrets, particularly on their neck, and prairie-dog fleas (Opisocrostis hirsutus) were taken from burrows inhabited by ferrets.

Man's activities probably present the greatest threat to ferrets. Henderson et al. (op. cit.) reported that of known ferret deaths, automobiles and domestic dogs have been responsible for more than any other form of mortality. Also, ferrets are probably shot when hunters mistake them for prairie dogs.

Widespread use of compound 1080, one poison used to control prairie dogs, may affect the ferret population. To determine if secondary poisoning of ferrets could exist, domestic ferrets were used as experimental animals because they are the closest relative of the black-footed ferret and some of their habits are similar. The domestic ferret I studied dug in a manner resembling that of wild ferrets. It also killed its victims in a similar manner. The domestic ferret consumed 130-450 grams of mink food daily with no differences noted during fall, winter, or spring. Progulske (op. cit.) reported that a captive black-footed ferret consumed an average of 205 grams of mink food daily from June through December.

Oats poisoned with 1080 were free-fed to prairie dogs and poisoned dogs were then fed to ferrets. Two ferrets were fed eviscerated 1080-poisoned prairie dogs on November 21 and 26, 1967, while two control ferrets were fed eviscerated non-poisoned prairie dogs. Ferrets exhibited no effects following the first feeding; however, after the second feeding both experimental animals exhibited abnormal behavior. Ferrets were then fed viscera from the prairie dogs they had consumed previously. One experimental animal died 1½ days later. The other became sick but apparently recovered on the same day. It was again fed viscera and died five hours after eating. Following termination of the experiment, control animals were fed viscera of poisoned dogs. They were fed several times before they died; however, after each feeding both animals exhibited abnormal behavior, which included poor coordination, violent thrashing and muscular spasms.

It has been demonstrated that 1080-poisoned prairie dogs can cause secondary poisoning of domestic ferrets. It can also induce abnormal behavior patterns during the period when poisoning symptoms are exhibited which might make them vulnerable to predators. Furthermore, large-scale eradication of prairie dogs undoubtedly influences the distribution and status of ferrets by greatly reducing their food supply.

FUTURE RESEARCH NEEDS

The black-footed ferret, because of its secretive nature, is not readily observed. Although considered an endangered species, it is apparently more common in South Dakota than was once thought. Literature on the ferret is limited and some of the previously-reported information was in partial error. Observations made in this study and that reported by Henderson et al. (op. cit.) give a broad background for a continuation of needed, detailed studies.

No ferrets were observed to move between prairie-dog towns, but movement from one town to another or long-range movement probably occurs. Marking individuals is essential before movement patterns can be traced. Also, very little is known of the ferret's breeding behavior. Adults are infrequently seen in the company of one another, and all indications are that adult females rear their young alone. If ferrets were raised in captivity, much could be learned of their breeding biology, feeding habits and other activities.

Predator-prey relationships between the ferret and prairie dog are not fully understood. Poisoning of prairie dogs with 1080-poison or strychnine will probably continue. Experiments should be continued on secondary poisoning effects.

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FERRET SIGHTINGS DURING 1966

Date	Location		First observed
May 1	T43N R31W S25	England Ranch	2:30a.m.
May 4	"	"	5:15a.m.
May 6	"	"	4:10a.m.
May 15	"	"	2:15a.m.
May 24	"	"	1:45p.m.
June 2	"	"	6:07a.m.
June 14	"	"	6:15a.m.
July 4	"	"	12 midnight
July 5	"	"	7:35a.m.
August 23	"	"	10:45a.m.
October 1	"	"	8:40a.m.
July 12	T41N R31W S14	Carr Ranch	6:02a.m.
July 14	"	"	6:30a.m.
July 15	"	"	7:20a.m.
July 16	"	"	7:54a.m.
July 18	"	"	12:30a.m.
July 23	"	"	8:00a.m.
July 25	"	"	6:25a.m.
July 26	"	"	7:45a.m.
July 27	"	"	6:20a.m.
July 28	"	"	4:35a.m.

FERRET SIGHTINGS DURING 1966 (cont.)

July 29	T41N R31W S14	Carr Ranch	4:50a.m.
July 30	"	"	6:20a.m.
August 2	"	"	11:10p.m.
August 3	"	"	5:50a.m.
August 3	"	"	9:00p.m.
August 5	"	"	1:48a.m.
August 5	"	"	5:10a.m.
August 7	"	"	5:10a.m.
August 8	"	"	8:20a.m.
August 11	"	"	9:05p.m.
August 12	"	"	6:35a.m.
August 16	"	"	5:00a.m.
August 17	"	"	8:05p.m.
August 18	"	"	8:05a.m.
August 22	"	"	6:20a.m.
August 23	"	"	8:05p.m.
August 24	"	"	6:45a.m.
August 25	"	"	7:10a.m.
August 25	"	"	9:20p.m.
August 30	"	"	8:05p.m.
September 3	"	"	8:35p.m.
October 7	T42N R32W S10	Rasmussen Ranch	8:50a.m.
October 9	"	"	4:20a.m.
November 1	T42N R30W S17	Adkinson Ranch	9:15a.m.

FERRET SIGHTINGS DURING 1967

May 16	T41N R30W S16	Carr Ranch	12:10a.m.
June 27	"	"	12:30a.m.
June 28	"	"	10:50p.m.
July 6	"	"	11:35p.m.
July 10	"	"	10:30p.m.
July 11	"	"	10:30p.m.
July 12	"	"	10:15p.m.
July 13	"	"	10:20p.m.
July 15	"	"	10:30p.m.
July 16	"	"	10:35p.m.
July 17	"	"	10:00p.m.
July 18	"	"	10:10p.m.
July 19	"	"	11:50p.m.
July 20	"	"	12:45a.m.
July 27	"	"	11:00p.m.
July 28	"	"	10:45p.m.
August 8	"	"	10:05p.m.
August 12	"	"	9:35p.m.
August 13	"	"	9:05p.m.
August 14	"	"	9:05p.m.
August 15	"	"	9:15a.m.
August 17	"	"	9:35p.m.
August 18	"	"	9:20p.m.

FERRET SIGHTINGS DURING 1967 (cont.)

August 23	T41N R30W S16	Carr Ranch	10:50p.m.
August 24	"	"	5:00a.m.
August 26	"	"	7:00a.m.
August 30	"	"	7:34a.m.
September 2	"	"	5:45a.m.
September 3	"	"	5:30a.m.
September 4	"	"	10:15p.m.
September 5	"	"	6:45a.m.
September 6	"	"	8:30p.m.
September 7	"	"	9:15a.m.
September 8	"	"	9:10a.m.
September 8	"	"	9:15p.m.
September 9	"	"	8:50p.m.
September 10	"	"	5:10a.m.
August 2	T41N R29W S3	Indian Land	2:05p.m.
August 18	"	"	2:32p.m.
August 25	"	"	10:15p.m.
August 9	T41N R31W S14	Carr Ranch	12:40a.m.