

# TECHNIQUES USED TO ESTABLISH AND LIMIT PRAIRIE DOG TOWNS

James C. Lewis\*, E. H. McIlvain, Robert McVickers, and Berkeley Peterson

Oklahoma Cooperative Wildlife Research Unit, Oklahoma State University, Stillwater 74074;  
Southern Great Plains Field Station, U. S. Department of Agriculture, Woodward, Oklahoma 73801;  
Wildlife Services Division, U.S. Fish and Wildlife Service, Buffalo, Oklahoma 73834;  
and Wildlife Services Division, Oklahoma City, Oklahoma 73102

Techniques used to establish blacktail prairie dog (*Cynomys ludovicianus*) towns are described to assist persons planning to establish such colonies. Prairie dogs were captured in 1973-75 as they exited from burrows flooded by water and detergent. They were placed in holding cages in six 2.5-ha pastures fenced with poultry wire, held captive for 3-12 days, and then permitted to escape. Our goal of 10 prairie dogs overwintering per ha was reached in winter 1975-76. Prairie dogs that moved to pastures adjacent to the release area were gassed or were repelled by using R-55 and placing visual barriers around burrows.

## INTRODUCTION

Prairie dogs were established in six pastures to study their ecology. Techniques used to establish these colonies, and to limit the acreage they occupied, were experimental. Descriptions of such techniques had not been published but are described here to assist persons planning to establish prairie dog colonies in zoos, on nature parks and refuges, for personal enjoyment on private land, or for research purposes. Our project was a cooperative venture of the Agricultural Research Service, U.S. Department of Agriculture (USDA); the Oklahoma Cooperative Wildlife Research Unit (Oklahoma Department of Wildlife Conservation, Oklahoma State University, Wildlife Management Institute, and U.S. Fish and Wildlife Service cooperating); and the Wildlife Services Division, U.S. Fish and Wildlife Service.

## METHODS

Two to four persons captured prairie dogs by flooding burrows with water and high-sudsing, cold-water detergents, a technique described by Elias et al. (1). We flooded burrow systems where prairie dogs were seen or where fresh droppings and diggings were present. A truck-mounted water tank was used and water entered burrows from a hose. The detergent was dripped into the stream of water. Prairie dogs were captured with a Ketch-all<sup>†</sup> long-handled snare or a short-handled net as they left the burrows. Two wet, shivering prairie dogs died soon after capture. We believe it is important to keep wet prairie dogs in the sun and protected from the wind.

Four prairie dogs were placed in each transfer cage (20 cm high by 0.3 m by 0.6 m) for transport to the release site. The release site is located 6 km northwest of Fort Supply on lands of the USDA's Southern Great Plains Experimental Range in the Oklahoma Panhandle. The release pastures contained prairie dog colonies in the 1940's; thus, we presumed the sites were suitable habitat. The predominant plant species, in the six 2.5-ha pastures, were blue grama (*Bouteloua gracilis*) in association with sand dropseed (*Sporobolus cryptandrus*), other grasses, and forbs.

Prairie dogs were captured and released in the pastures in July and October 1973, September 1974, and July 1975. Our goal was to attain a winter population of 10 prairie dogs per ha, a density characteristic of dog towns in the Oklahoma Panhandle and one suitable for our research. Prairie dogs were placed in hardware-cloth hold-

\*Present address: U.S. Fish and Wildlife Service, 270 Aylesworth Hall, C.S.U., Fort Collins, CO 80523.

<sup>†</sup>Mention of a product does not constitute endorsement by the authors or agencies they represent.

ing cages 0.3 m high by 1.2 m by 1.8 m and retained 3-12 days to accustom them to the release site. They fed on native forage through the cage bottom and were given green sorghum stalks, sorghum and wheat seed, lettuce, prairie hay, and cabbage.

Cages were anchored to the ground to limit predation by coyotes (*Canis latrans*) and badgers (*Taxidea taxus*). An aluminum sun shade was wired to the top of each holding cage. A wooden box (20 cm high by 0.3 m by 0.6 m) inside each cage provided a place for the prairie dogs to sleep and hide. Prairie dogs seldom require freestanding water but, due to high ambient temperatures, water was provided in a can wired to the side of each cage. On the release day a panel was removed from the bottom of the cage to permit the occupants to burrow out.

Poultry fence 0.9 m high was attached to the lower strands of barb wire around each pasture; the top of the fence was not attached. When prairie dogs were later noted climbing the fence the top would bend into the pasture until they dropped to the ground. The bottom 6 cm of fence was bent into the pasture, pressed flat on the ground, and anchored. We did not believe the fence would be prairie-dog proof but it was designed to discourage them from leaving. (We were aware of situations where prairie dogs tunneled beneath a concrete wall, that extended 0.6 m into the ground, and scaled a 4-m-high hardware cloth fence; thus, we doubted that a large prairie-dog-proof enclosure could be built at practical expense.)

After the first two releases, additional poultry fencing was attached to the bottom of the existing poultry fence, laid flat on the ground inside the pastures, and partially covered by dirt to further deter prairie dogs from tunneling beneath the fence.

We made time-area censuses (2) to estimate population size and evaluate success of the release. The rodent repellent R-55 (Phillips Petroleum) and asphalt-impregnated burlap barriers 45.7 cm high were tested to discourage prairie dogs from occupying burrows in pastures where they were trespassing. We killed prairie dogs that did not respond to the repellents. Gas cartridges, authorized by the Environmental Protection Agency for control of burrowing rodents, were placed inside burrows and the entrances were plugged. The number of prairie dogs estimated destroyed during control was based on pre- and post-treatment censuses.

## RESULTS

Forcing prairie dogs from a burrow system usually required flooding two to five burrow entrances. An average of 518 l of water and 946 g of detergent were required per capture; half the flooded burrows provided a capture. We tested Joy, Ivory, Vel, Lux, Dove, Whisk, Palmolive, and MC<sup>2</sup> liquid detergents; subjectively the latter two were considered the most economical and effective.

In July 1973, 148 prairie dogs were placed in holding cages at the release site. Four holding cages were distributed systematically in each of the release pastures with five to seven prairie dogs in each cage. Half of the prairie dogs were held for 6-8 days; the remaining captives were released 4 days later. Usually the prairie dogs burrowed out less than 12 hours after the cage panel was removed and chose hilltops and slopes for burrow sites.

Thirty-seven to 51 (25-33%) of the released prairie dogs were visible in August 1973 (Table 1) in the six release pastures and two adjacent pastures. Fifty burrow entrances were present in a pasture where nine prairie dogs were counted. Ten, 38, and 37 burrows were counted in other pastures where six, seven, and four prairie dogs, respectively, were counted. Numbers of burrows did not indicate the number of prairie dogs present. In South Dakota, King (3) noted 5.4 burrow openings per prairie dog in 1948, 9.6 in 1949, and 4.2 in 1950.

In October 1973, 38 prairie dogs were captured and placed in holding cages to accelerate population growth. Two prairie dogs died in the holding cages and after release one was killed by an owl. There was little construction of new burrows but some prairie dogs moved into burrows that had been unoccupied before the release.

Prairie dogs trespassed into neighboring pastures by pushing up the fence and then crawling between the fence and the ground.

TABLE 1. Numbers of prairie dogs released and minimum estimate of numbers present, Fort Supply Experimental Range, July 1973 to April 1977.

Release (R) or census (C) period	Pasture and number of prairie dogs									Minimum estimate <sup>a</sup>
	1	2	3	7	8	9	10	11	12	
Jul 73 (R)		25	24	24		25		25	25	148
Aug 73 (C)	1	11	11	6	2	7		4	9	51
Oct 73 (R)		7	5	9		8		9		38
May 74 (C)		5	5	9		2		3	11	35
Aug 74 (C)	1	2	3	10	7	3		5	11	42
Sep 74 (R)			24	8	13 <sup>b</sup>	7		12		64
Dec 74 (C)		4	2	5	4	2		8	16	41
Jul 75 (R)			27	14	11	11				63
Aug 75 (C)	4	15	10	15	14	13	3 <sup>c</sup>	22	20	116
Dec 76 (C)	1			45	50	28	40	40	40	244
Apr 77 (C)				29	54	37	35	46	54	255

<sup>a</sup>These estimates do not include individuals underground during the census.

<sup>b</sup>Pasture 8 designated a prairie dog site (see text).

<sup>c</sup>Pasture 10 designated a prairie dog site (see text).

Six burrows were present in these adjacent pastures. The repellent R-55 was poured on rags, manure, gourds, and dirt in burrow entrances and in areas used as runways beneath fences. The entrances and runways were then plugged with dirt but prairie dogs did not avoid the treated sites. Poultry fencing was anchored in additional areas to discourage prairie dogs from pushing under it.

Five prairie dogs trespassing in the north end of pasture 8 were gassed in November 1973. In April 1974, prairie dogs again moved into the preferred spot in pasture 8 and six were gassed. Killing the trespassing prairie dogs further depleted the experimental population, acquired at considerable cost and labor, that was still below the desired numbers. Retaining our original choice of release pastures meant killing prairie dogs that trespassed into pasture 8. Thus, in September 1974, pasture 8 was converted to a prairie dog site and pasture 2 was eliminated as a site for prairie dogs.

On 4-6 September 1974, 64 prairie dogs were captured, placed in holding cages for 3 to 4 days, and then released (Table 1). In spring 1975, portions of four pastures remained unoccupied; consequently another release was made.

Sixty-three prairie dogs captured July 1975 were confined for 5 days in holding cages in the unoccupied portions of the four pastures. Forty days post release the prairie dogs still resided in previously unoccupied portions of three pastures. Pasture 3 was only briefly occupied at the north end and prairie dogs left there by mid-August. We had been unsuccessful in establishing prairie dogs anywhere in pasture 3 except the southern 10%. Thus, in August 1975 we designated pasture 10 as a prairie dog site and eliminated pasture 3 as a prairie dog site.

In 1975 the repellent R-55 was poured into buffalo gourds (*Curcubita foetidissima*) that were rolled into the burrows of an estimated 23 trespassing prairie dogs; the entrances were then plugged. Treatment was repeated several times at several-day intervals. At least six of the prairie dogs refused to leave, but the others moved back to the appropriate pastures. Asphalt-impregnated burlap barriers were placed around the burrows occupied by the six trespassing prairie dogs. These prairie dogs then moved to other burrows but were still trespassing. Consequently, we killed them. Trespassing prairie dogs required periodic control because after burrow occupants were destroyed new immigrants arrived from one week to three months later.

Minimum populations increased from 51 in August 1973 (Table 1) to about 255 in 1977. On a study area in the Oklahoma Panhandle (4) an average of 60% of the prairie dogs were above ground and visible to an observer making similar 10-minute counts. If only 60% of the prairie dogs were visible during censuses at the Experimental Range, we reached our population goal of 150 prairie dogs in the winter of 1975-76.

## DISCUSSION

Our experience with releases of prairie dogs, including some releases not described in this article, indicates that prairie dogs will not dig burrows and establish a new colony in fall. The optimum months to capture prairie dogs at our latitude appear to be June and July because (1) the pups are large enough to escape as the burrow floods and (2) pups are still with the female, so that captures per effort are highest.

Ten to 20 prairie dogs would be sufficient to start a colony if there was no need to quickly attain a specific population. Wint (5) mentioned a dog town that started from only five individuals and in a few years attained a population of 100. The optimum sex and age composition of 20 released animals would be: (1) 2-3 adult males, each to provide the nucleus for a coterie, and (2) the remainder females, principally adults.

We recommend that prairie dogs be kept in holding cages for 3 to 5 days to adjust to the release area and, thereby, to reduce the possibility of emigration. We do not know what the prairie dogs' response would be to immediate release at the site. Poultry fencing did discourage some prairie dogs from leaving the site immediately after release. A temporary fence encompassing 0.25 ha may be large enough to encourage establishment of a small colony.

Our concepts of suitable release sites are based on knowledge gained from surveying thousands of hectares of dog towns in Oklahoma, Colorado, Kansas, and Texas and based on the literature about prairie dogs. Suitable release sites should contain predominantly short grass species or have the short grass aspect due to mowing, overgrazing, or burning. The sites should be well-drained uplands (hillcrests and slopes) of sandy loam or clay soils. Fine, sandy soils do not provide adequate burrow sites. The release sites should be the preferred habitat in the vicinity, otherwise prairie dogs will leave to reside at a favored spot (as occurred at two of our six release pastures when prairie dogs moved 30-100 m into adjacent pastures).

Visual barriers placed around burrow entrances and the repellent R-55 placed in burrows are useful to force prairie dogs from areas where they are trespassing. Gas cartridges can be used to kill trespassing prairie dogs and to limit the population size of a colony.

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