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THE INFLUENCE OF
HABITAT MANIPULATIONS ON THE
UTAH PRAIRIE DOG

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ABSTRACT

Utah prairie dogs are restricted to habitats of relatively level, open plant communities in south-central Utah. They prefer areas dominated by vegetation less than 32 cm tall. They are opportunists, ready to eat any abundant nutritive food. Disturbances, such as grazing by domestic livestock and the clearing of land for agricultural use, either increase the abundance of local prairie dogs or open up the area to prairie dog invasion.

INTRODUCTION

Only recently has any research been directed specifically toward habitat manipulation for any species of prairie dog (Cynomys sp.). None of this research has been carried out for the Utah prairie dog (C. parvidens). Unintentional experiments have occurred however, and their results can be directly applied to the management of prairie dog habitat.

EFFECTS OF GRAZING BY DOMESTIC LIVESTOCK

The movement of European man and his domestic livestock westward during the colonization of the United States had a drastic effect on prairie dog habitat. The introduction of livestock into the mixed- and tall-grass prairies caused a vegetational change over vast areas. The grasses of the mixed- and tall-grass prairies were less resistant to grazing than the grasses of the short-grass prairie. Consequently the short-grass prairie grasses (Buchloe sp. and Bouteloua sp.) spread eastward into the mixed- and tall-grass prairies (Stoddart et al. 1975). Prairie dogs quickly followed the eastward spread of the short-grass prairie (Schaffner 1926). A similar invasion of prairie dogs resulted when livestock were introduced into the shinnery oak (shrub oak; Quercus sp.) savannah of Oklahoma (Osborn 1942).

Osborn and Allan (1949) reported that when grazing of livestock was restricted on areas occupied by a colony of black-tailed prairie dogs (C. ludovicianus) in the tall-grass prairie the population gradually

declined as the tall grasses once again became dominant. After 14 years no prairie dogs could be found there. Whereas, prairie dogs expanded their range in the colonies nearby where grazing was allowed.

It appears from these and other examples, that the vegetational changes caused by grazing are beneficial to prairie dogs. It would be difficult to determine exactly what changes are the most beneficial. Koford (1958) hypothesized that the reduction in height of the vegetation was the main factor.

EFFECTS OF AGRICULTURE

An expansion of prairie dogs range has occurred as the result of the clearing of land for agricultural use. In a study concerning the Gunnison prairie dog (C. gunnisoni) in Colorado, Longhurst (1944:36) found that in areas where sagebrush (Artemisia tridentata) was over 32 cm tall there was an average of less than 5 prairie dogs per hectare. Where the brush had been cleared, the average reached 50 prairie dogs per hectare. He said, "It was apparent that in the valley, clearing of the land for agriculture has favored the increase of prairie dogs".

Collier (1974) claimed that transplanting the Utah prairie dog into sites where more than 10 percent of the vegetation was above 32 cm would likely be unsuccessful. He found that the colonies of Utah prairie dogs with the highest population densities were all located on or near abandoned alfalfa (Medicago sativa) or crested wheatgrass (Agropyron cristatum) fields.

It seems that agricultural practices that reduce the vegetation height below 32 cm would be beneficial to prairie dogs. Of course, this is true only if agricultural practices, such as flood irrigation

and frequent clean plowing are not practiced, since these are very detrimental to prairie dogs.

EFFECTS OF HERBICIDES

Fagerstone et al. (1977) reported that black-tailed prairie dog's diets were significantly changed from forbs to grasses when the colony was sprayed with 2,4-D. Before spraying, prairie dogs were eating 73 percent forbs and 5 percent grasses. Afterward, they ate 9 percent forbs and 82 percent grasses. This was due to the fact that 2,4-D killed only the broad-leaf plants. Despite the change in diet, the 2,4-D treatment appeared to have little detrimental effect on prairie dogs. Measurements of their body weight indicated that they remained in good condition after the treatment. They found no significant difference between the prairie dog activity in the treated colony and the activity in an untreated colony located nearby.

This finding suggested that it may be possible to enhance prairie dog habitat in areas invaded by tall brush and forbs by using 2,4-D to reduce the height of the vegetation. However, prairie dogs obtain most of their water from plants (Koford 1958, Collier 1974). Since forbs contain more moisture than grasses (Sharif 1969) the reduction of forbs caused by using 2,4-D may be detrimental to prairie dogs in areas where the grasses contain insufficient moisture. This is especially true during times of drought. Forbs were found to be positively correlated with abundance of the Utah prairie dog (Collier 1974) and the black-tailed prairie dog (Koford 1958). Whereas grasses showed no correlation (positively or negatively) with abundance of the Utah prairie dog (Collier 1974).

In light of these facts, it seems that 2,4-D should be used to improve prairie dog habitat only in areas where the grass species provide sufficient moisture throughout the summer and fall for the prairie dogs.

CONCLUSION

It appears that any habitat manipulation that reduces the vegetation below a height of 32 cm would make the area more favorable for prairie dogs. Of course the area must be within the range of the species, and there must be adequate forage left to sustain the animals. Conversely it appears that vegetation manipulation that increases the vegetation height beyond 32 cm would be detrimental to prairie dog occupation of the area.

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