AN ABSTRACT OF THE THESIS OF

Lynne Fox-Parrish for the Master's degree in Biological Science

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Title: Attitudes and opinions of landowners and general citizens relative to the black-tailed prairie dog

Abstract approved: Elmer J. Finck

The black-tailed prairie dog (*Cynomys ludovicianus*) is a species in need of conservation that continues to decline throughout the Great Plains. This decline is due to habitat loss, plague, sport hunting, and poisoning programs. Many scientists consider the black-tailed prairie dog a keystone species, therefore, its decline is negatively affecting those species that rely on the black-tailed prairie dog and/or its habitat for their own survival. Each state in the historical range of the black-tailed prairie dog is developing their own black-tailed prairie dog management and or conservation plan. As Kansas develops its management plan, wildlife officials will need to know and understand the attitudes and opinions of landowners and general citizens relative to the black-tailed prairie dog. By using a mail survey, I assessed the attitudes and opinions of Kansas landowners and general citizens west of the Flint Hills. Landowners expressed more negative opinions relative to the black-tailed prairie dog than did general citizens ($P \leq 0.01$). Landowners that lived counties with a high abundance of black-tailed prairie dog colonies were more likely to express negative attitudes relative to the black-tailed prairie dog than those living in counties with a low abundance of black-tailed prairie dog colonies ($P \leq 0.01$). Most general

citizens expressed no opinion relative to the black-tailed prairie dog but male general citizens were more negative than females ($P \leq 0.01$). Although the differences in agreement were significant ($P \leq 0.01$), general citizens agreed with landowners that black-tailed prairie dog burrows cause injury to livestock and that landowners should have the choice to remove or control black-tailed prairie dogs on their property. They also agreed with landowners that the black-tailed prairie dog should not be protected under the Endangered Species Act. Knowledge level was the same for both landowners and general citizens, although landowners that lived in counties with a high abundance of black-tailed prairie dog colonies had more knowledge than landowners that lived in counties with a low abundance of black-tailed prairie dog colonies and male general citizens had more knowledge than female general citizens. Educational programs about the black-tailed prairie dog should be developed for all citizens in Kansas but should particularly target landowners and male general citizens.

ATTITUDES AND OPINIONS OF LANDOWNERS AND GENERAL CITIZENS RELATIVE TO THE BLACK-TAILED PRAIRIE DOG

A Thesis

Presented to

The Department of Biological Sciences

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In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

Lynne Fox-Parrish

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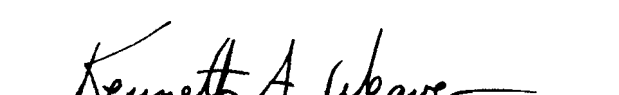
Approved by Major Advisor

Approved by Committee Member

Approved by Committee Member



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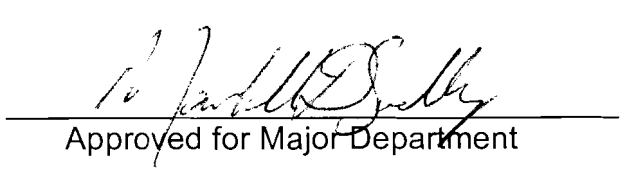

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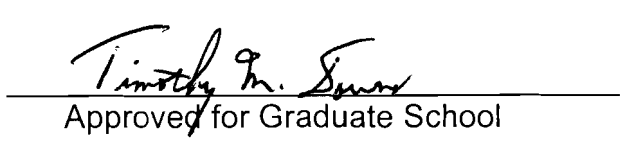

Approved for Graduate School

ACKNOWLEDGMENTS

I thank my major advisor, Dr. Elmer J. Finck for his guidance, support, and assistance in all aspects of my education at Emporia State University. I thank my committee members, Roger Applegate, Dr. Dwight Moore, and Dr. Ken Weaver for their support and advice throughout my study, particularly the statistical advice they provided. Thanks to Kansas Department of Wildlife and Parks for providing the funding that allowed me to carry out the project. I thank Marta Robertson of the Kansas Department of Wildlife and Parks for her assistance in preparing my survey in Microsoft Access and with the mailing process. Many thanks to the Kansas Prairie Dog Conservation Task Force and selected faculty and graduate students at Emporia State University for participating in the pilot study. The pilot study provided many helpful comments and suggestions regarding the survey. I thank the following graduate students for their assistance: Brian Flock for his help with the generation of maps; Sarah Kafka, Andrea Ostroff, and Dana Slaughter for their help with the mailing process. I thank my husband, Jared Parrish, for his support and guidance that allowed me to be a successful graduate student.

PREFACE

My thesis is written in a style suitable for publication in the Wildlife Society Bulletin.

Respondents were asked to respond in English measurements therefore, all data are reported in English measurements.

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INTRODUCTION

The black-tailed prairie dog (*Cynomys ludovicianus*) once was the most numerous mammalian herbivore found on the Great Plains (Merriam 1902, Koford 1958). Some estimates place its historic numbers as high as five billion (Seton 1929, Costello 1970). Since the beginning of the twentieth century, black-tailed prairie dogs have declined throughout North America (Miller et al. 1994, Wuerthner 1997). This reduction was the result of large-scale eradication programs, sylvatic plague (*Yersinia pestis*), habitat loss, over-grazing, and the switching of large native herbivores, such as bison (*Bos bison*), for cattle (*Bos taurus*) (Hoogland 1995). Eradication programs were conducted because ranchers thought the black-tailed prairie dog competed with cattle for forage (Costello 1970). This supposed competition resulted in the reputation of the black-tailed prairie dog as a range and agricultural pest (Roemer and Forrest 1996). Because the habits and dietary requirements of cattle are similar to that of bison, large numbers of cattle and black-tailed prairie dogs should be able to co-exist in the same area (Hoogland 1995).

The drastic reduction of black-tailed prairie dogs is threatening biodiversity in the grassland ecosystem (Miller et al. 1990, Sharps and Uresk 1990). Arguably, black-tailed prairie dogs alter native plant communities as a result of their burrowing activities and consumption of large quantities of vegetation. As a result of their burrowing activities and excrement, black-tailed prairie dogs increased vegetative diversity by altering soil structure and chemical composition (Hansen and Gold 1977, O'Meilia et al. 1982). Black-tailed prairie dog excavations resulted in the moving and

mixing of soil; therefore, soil in black-tailed prairie dog colonies was richer in nitrogen, phosphorus, and organic matter than soils in adjacent grasslands (Sharps and Uresk 1990). Black-tailed prairie dog activities suppressed plant phenological development, by keeping the plant in a vegetative state (Sharps and Uresk 1990). Young vegetation was higher in nutritional value and actually attracted cattle, bison, and pronghorn (*Antilocapra americana*) to the colonies (Coppock et al. 1983b, Whicker and Detling 1988).

One study concluded that black-tailed prairie dog burrowing activities modified the soil, which allowed for a higher abundance of plant nematodes and increased nitrogen levels in the soil (Ingham and Detling 1984). This gave plants a higher nutritional content, higher digestibility, and a greater ratio of live plants to dead plants, which provided a favorable feeding habitat for other herbivores. Coppock et al. (1983a) showed that bison actively selected black-tailed prairie dog towns they encountered. In Colorado, Hansen and Gold (1977) found an increase in plant diversity in black-tailed prairie dog towns and cattle that grazed in these towns averaged no gains or losses in mass (Marvin Shoop, Agr. Res. Serv., personal communication). O'Melia et al. (1982) found that steers grazing in black-tailed prairie dog towns had less forage to graze but their mass did not differ from steers grazing in pastures without black-tailed prairie dog towns. They also showed a higher biomass of arthropods and small mammals in pastures with black-tailed prairie dog towns than those without black-tailed prairie dog towns. Studies by Coppock et al. (1983b) and Krueger (1986) showed bison, elk (*Cervus elaphus*) and pronghorn preferentially selected black-tailed prairie dog colonies over uncolonized

grasslands. Using a ruminant nutrition model, Vanderhye (1985) revealed that mature cows feeding in black-tailed prairie dog colonies gained 7% additional body mass when compared to feeding outside the colonies. The model also showed that yearling bison would benefit more than cows due to their efficient use of proteins. These studies suggested that competition between black-tailed prairie dogs and livestock was minimal and that livestock actually benefited from grazing in black-tailed prairie dog colonies.

Another misconception was that cattle and horses (*Equus caballus*) break their legs by stepping into black-tailed prairie dog burrows (Hoogland 1995). Despite the complaints, there has been no documented evidence to support these claims (Hoogland 1995). Whether or not black-tailed prairie dogs compete for forage with livestock or if they increase or decrease biotic diversity, they are part of the natural ecosystem.

Stapp (1998) stated that further studies are needed in order to characterize the black-tailed prairie dog as a keystone species. He felt that there is a gap in our knowledge and understanding of the ecology of prairie dogs in the Great Plains ecosystem, although some studies have shown that the black-tailed prairie dog played a vital role in the ecosystem and can be considered a keystone species. Miller et al. (2000) defined a keystone species as one that influences ecosystem structure, composition, and function in a unique and significant manner through their activities, and the effect was disproportionate to their numerical abundance. They suggested that black-tailed prairie dogs fit this definition. According to Kotlier et al. (1999), prairie dogs fit the definition of a keystone species because they significantly

affected ecosystem structure, function, and composition, and the impact was not wholly duplicated by any other species.

The burrowing activities and feeding habits of black-tailed prairie dogs directly were responsible for creating habitat for some species of vertebrates e.g., snakes, burrowing owls (*Athene cunicularia*), ornate box turtles (*Terrapene ornata*), and invertebrates, e.g., nematodes (Sharps and Ursek 1990). The decline of the black-tailed prairie dog has caused the decline of other species. For example, black-tailed prairie dog eradication has caused the near extinction of the black-footed ferret (*Mustela nigripes*) (Miller et al. 1994). The black-footed ferret relies on prairie dogs as a food source and its habitat for reproductive success. Other species such as the mountain plover (*Charadrius montanus*), the ferruginous hawk (*Buteo regalis*), and the swift fox (*Vulpes velox*) have been proposed as candidate species under the Endangered Species Act (Miller et al. 1994). Their listing proposals cited that their decline was the result of black-tailed prairie dog poisoning, which decreased an important food source and/or habitat for these animals (Miller et al. 1994).

A conservation plan must be implemented to protect the black-tailed prairie dog and to ensure that it can function and maintain evolutionary and ecological processes. The black-tailed prairie dog ecosystem is already in danger of disappearing and if current trends are not reversed, the extinction of the black-tailed prairie dog and other species dependent on the black-tailed prairie dog will be inevitable (Wuerthner 1997).

On 31 July 1998, the National Wildlife Federation (NWF) petitioned the United States Fish and Wildlife Service (USFWS) to list the black-tailed prairie dog as threatened throughout its range under the Endangered Species Act (Van Pelt 1999). Listing was precluded due to the high abundance of other higher priority species. The black-tailed prairie dog is considered a candidate species; therefore its status will be reviewed annually (Van Pelt 1999). In an effort to conserve the black-tailed prairie dog, public attitudes and opinions need to be determined and an appropriate educational program concerning the conservation of the black-tailed prairie dog in Kansas needs to be developed. Zinn and Andelt (1999) surveyed attitudes and opinions of the general public relative to the black-tailed prairie dog in Fort Collins, Colorado. Their study found that residents living in close proximity to the black-tailed prairie dog expressed the highest degree of negativity. People not living in close proximity expressed more positive and tolerant attitudes. The data generated from their study will help guide the state of Colorado in developing on-going educational programs, which will better inform people of the need for black-tailed prairie dog conservation. Reading and Kellert (1993) found that proper education could play an important role in wildlife conservation. However, for people with strongly held beliefs, attitudes, and values, effective public education might not be enough. They suggested providing incentives for participating in a conservation program.

The objectives of my study were 1) to determine what landowners (ranchers and farmers) and the general public know about the black-tailed prairie dog, 2) to determine the attitudes and opinions relative to the black-tailed prairie dogs held by

landowners and the general public, 3) to determine the major misconceptions about the black-tailed prairie dog, 4) to determine any differences in attitude and/or opinion between landowners and the general public, and 5) to provide wildlife officials in the state of Kansas data that will allow them to determine if an educational program regarding the black-tailed prairie dog is necessary for landowners and/or the general public.

METHODS

I used a mail survey instead of a telephone survey because mail surveys have a higher probability of reaching the respondent (Dillman 1978) and are a more anonymous vehicle for obtaining information about attitudes and opinions than telephone surveys. Mail surveys are less sensitive to bias introduced by interviewers, and there are fewer tendencies for respondents to provide answers they think the interviewer wants to hear (Salant and Dillman 1994). A problem with mail surveys is a low response rate (Dillman 1978). The large sample size and length of my survey overcame this obstacle. Because my research involved human subjects, my research protocol for the survey was approved by the Emporia State University Institutional Review Board.

Eighteen hundred participants were randomly selected from 56 counties in the state of Kansas, west of the Flint Hills. The following counties were included in my survey: Barber, Barton, Cheyenne, Clark, Cornanche, Decatur, Edwards, Ellis, Ellsworth, Finney, Ford, Gove, Graham, Grant, Gray, Greeley, Hamilton, Harper, Haskell, Hodgeman, Jewell, Kearny, Kingman, Kiowa, Lane, Lincoln, Logan, Meade, Mitchell, Morton, Ness, Norton, Osborne, Pawnee, Phillips, Pratt, Rawlins, Reno, Republic, Rice, Rooks, Rush, Russell, Scott, Seward, Sheridan, Sherman, Smith, Stafford, Stanton, Stevens, Sumner, Thomas, Trego, Wallace, and Wichita. These counties represent the historic range of the black-tailed prairie dog in Kansas. People living in these counties have a higher probability of contact with the black-tailed prairie dog, as opposed to populations within the Flint Hills and east of the Flint Hills (Roger Applegate, KDWP, personal cornmunication).

A list of potential participants were provided by Survey Sampling Incorporated (SSI), Fairfield, Connecticut. From each county, SSI provided an average of 33 names, addresses, and telephone numbers of rural residents, for a total of 1800 residents in the sample. The sample size was inflated to reduce error associated with non-response and unusable surveys.

For each survey, I used two sheets of white 22cm x 28cm paper. Each sheet of paper had a horizontal fold in the middle and was stapled down the spine to form a booklet. The final dimensions of the survey were 22cm x 14cm and consisted of eight pages. No questions were printed on the front or back cover. The cover included an informative title, a brief statement about who was conducting the survey, and why the survey was being conducted. The back page provided respondents with space to make comments along with my name, my advisor's name, Dr. Elmer J. Finck, and our telephone numbers for contact. The bottom of the back page thanked the respondents for completing the survey. The paper used was 16-pound bond paper, which prevented ink from seeping through the pages. The survey was printed by using 12-point Times New Roman font. These characters eliminated any bias due to unfamiliarity of paper type, size, and color (Alreck and Settle, 1995).

I used questions with answers based on the Likert scale to determine attitudes and opinions. I used a 7-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = somewhat disagree; 4 = no opinon; 5 = somewhat agree; 6 = agree; and 7 = strongly agree). I used close-ended questions to determine knowledge levels. Finally, I used open-ended questions to acquire demographic information, such as age, sex, occupation, and property characteristics.

The layout of my survey followed that suggested by Dillman (1978), Salant and Dillman (1994), and Alreck and Settle (1995). Prior to the first official mailing, a cover letter and pilot survey were given to the Kansas Black-tailed Prairie Dog Conservation Task Force and to a random sample of graduate students, my committee, and faculty of Emporia State University (Appendices 2 and 3). The respondents that participated in the pilot survey provided comments and suggestions regarding the survey. This helped determine any ambiguities of the questions and/or construction defects. Pre-testing also determined if any aspect of the survey suggested a personal bias from the researcher.

One week before the mailing of the survey, I mailed a letter of awareness to each potential participant. This letter notified each potential participant that they had been chosen to participate in an important research study. The letter provided an explanation of the study and emphasized the importance of the potential participant's reply to the success of the study. The letter was printed on Emporia State University (ESU) letterhead along with my name, Dr. Elmer J. Finck's name, and our signatures (Appendix 4).

I mailed the survey one week after the letter of awareness was sent. The survey included a cover letter, which re-addressed the importance and purpose of the study, and also included directions on how to complete the survey, the amount of time needed to complete the survey, and the importance of their participation in the study. The cover letter was printed on ESU letterhead and signed by Dr. Elmer J. Finck and me (Appendices 5 and 8).

Two weeks after the mailing of the survey, I mailed a reminder postcard to those individuals that had not responded. The postcard reminded people to fill out the survey and return it as soon as possible. The postcard was signed by Dr. Elmer J. Finck and me (Appendix 6).

Two weeks after the postcard was sent, those that had not responded received a second reminder letter and a new survey. The letter was printed on ESU letterhead and signed by Dr. Elmer J. Finck and me (Appendix 7).

In my study, I included all surveys that were returned within four weeks of the last mailing. Any surveys I received after that time were excluded. When all surveys were received, the data were entered into Microsoft Access, which was then transferred to Microsoft Excel and finally to Statistical Program for Social Sciences (SPSS) for analysis.

All surveys were used in descriptive analysis (mean, median, range, etc.) but non-responses were excluded from inferential statistical analysis. I used one-way Analysis of Variance (ANOVA) to determine significant differences in attitude and opinion among landowners and among general citizens for 1) age ($\leq$ 48 years vs. $\geq$ 54 years), 2) sex, 3) education level (high school diploma vs. college degree), 4) proximity of the respondent's residence to a black-tailed prairie dog colony ($\leq$ 2 miles vs. $\geq$ 3 miles), 5) county in which they lived (counties with a high abundance of black-tailed prairie dog colonies ($\geq$30) vs. low abundance (<30) counties), and 6) presence and absence of black-tailed prairie dogs on the respondent's property. Respondents between the ages of 49 and 53 were not included in the analyses so that true differences could be detected between younger

and older individuals. Two-way ANOVA was used to determine whether differences existed between landowners and general citizens for the same variables relative to statements regarding the black-tailed prairie dog. I used Chi-Square analysis to determine statistical significance in knowledge levels among and between landowners and general citizens for the different variables. For example, Chi-Square was used to compare knowledge levels of those landowners who have black-tailed prairie dogs present on their land with those who do not. Knowledge level was defined as whether or not the respondent answered the question correctly or incorrectly.

Because of the large number of statistical analyses performed, an alpha level of 0.05 would have resulted in an increased chance of making a type I error. The result of a Bonferroni adjustment was an alpha level of 0.001. I felt that an alpha level of 0.001 was too stringent; therefore I chose to use an alpha level of 0.01 for all analyses. All statistical analyses were performed by using SPSS 10.0 for Windows (SPSS, Inc., Chicago, IL). Alreck and Settle (1995) suggested using chi-square, ANOVA, and t-tests for interpreting survey data.

RESULTS

Eighteen hundred participants from 56 counties were randomly chosen to participate in the study. Surveys were returned from all but one of the 56 counties (Table 1). The highest percentage of responses were from Reno County (18%, n=118) followed by Ellis County (7%, n=47), and Barton County (7%, n=44). Based on surveys conducted by the KDWP in 1992 (unpublished data), seven of the 56 counties had 30 or more black-tailed prairie dog colonies. The remaining 49 counties had less than 30 black-tailed prairie dog colonies.

Of the 1800 surveys mailed, 250 (14%) were not deliverable. These participants had moved, leaving no forwarding address, or were deceased. Of the 1550 deliverable surveys, 750 (48%) responded. Of the 750 that responded, seven surveys were not usable because participants did not follow directions in filling out the survey. Of the 743 usable surveys, 250 (34%) were landowners, 392 (53%) were general citizens, and 101 (14%) did not state their profession. The surveys in which the respondent did not state their profession were used only in descriptive analyses.

Landowners were characterized by those that ranched, farmed, or ranched and farmed their land. The profession of general citizens varied greatly (Figure 1). Common occupations of general citizens included business, medical, and blue-collar professions.

The majority of respondent were male (72.5%, n=503). Males

Table 1. Number of respondents per county sampled (n=679).

County	(n)	(%)	County	(n)	(%)
Barber	13	1.9	Norton	15	2.2
Barton	44	6.5	Osborne	7	1.0
Cheyenne**	5	0.7	Pawnee	12	1.8
Clark	3	0.4	Phillips	8	1.2
Comanche	3	0.4	Pratt	23	3.3
Decatur	7	1.0	Rawlins**	11	1.6
Edwards	6	0.9	Reno	118	17.5
Ellis	47	7.0	Republic	1	0.1
Ellsworth	12	1.8	Rice	23	3.3
Finney	30	4.4	Rooks	12	1.8
Ford	34	5.0	Rush	5	0.7
Gove	4	0.6	Russell	17	2.5
Graham	5	0.7	Scott	8	1.2
Grant	16	2.4	Seward	16	2.4
Gray	7	1.0	Sheridan	4	0.6
Greeley	3	0.4	Sherman**	19	2.8
Hamilton	1	0.1	Smith	10	1.5
Harper	13	1.9	Stafford	11	1.6
Haskell	1	0.1	Stanton	2	0.3
Hodgeman	6	0.9	Stevens	5	0.7
Jewell	7	1.0	Sumner	1	0.1
Kearny	0	0.0	Thomas**	13	1.9
Kingman	16	2.4	Trego	7	1.0
Kiowa	3	0.4	Wallace	3	0.4
Lane**	3	0.4	Wichita	1	0.1
Lincoln	7	1.0			
Logan **	4	0.6			
Meade	1	0.1			
Mitchell	13	1.9			
Morton**	2	0.3			
Ness	6	0.9			

**counties with more than 30 black-tailed prairie dog colonies (KDWP, 1992 unpublished data)

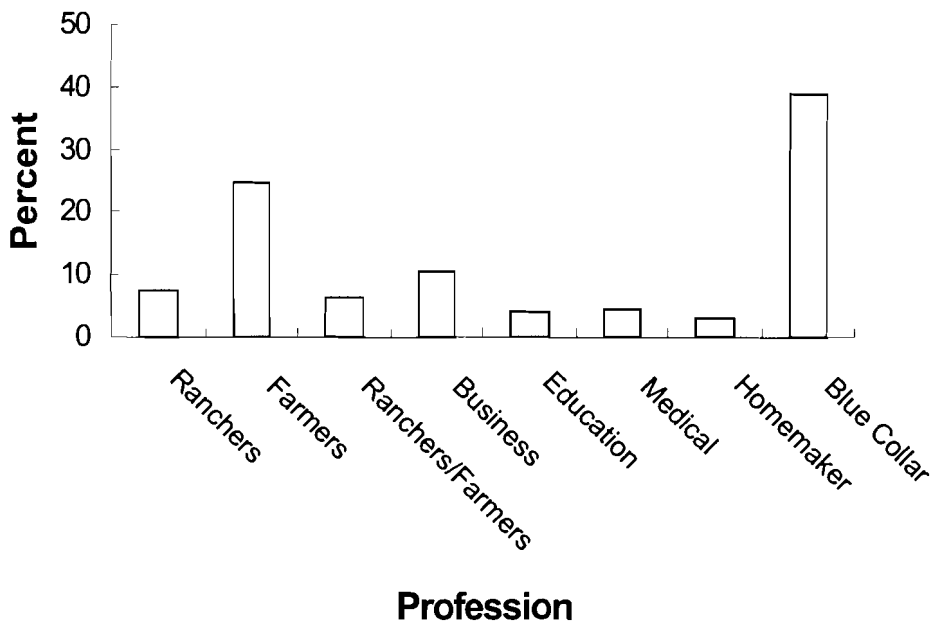

Figure 1. Profession of survey participants.

comprised the majority of landowners (82%, n=202) and general citizens (69%, n=270) (Figure 2). The mean age of respondents was 54.5 years (median=53), with a range of 14 to 101 (Figure 3). Thirty-four percent (n=237) of respondents reported that some college was their highest level of education. Twenty seven percent of respondents (n=190) had a college degree, 27% (n=189) had a high school diploma, and 7.0 % (n=48) had less than an eighth grade education. Thirty-three percent (n=81) of landowners and 36% (n=138) of general citizens reported some college as their highest level of education (Figure 4).

Of the 250 landowners that responded, 78% (n=196) stated that they owned or managed their land. Of the 392 general citizens that responded, 33% (n=129) stated that they owned or managed their land. Forty-three percent (n= 85) of landowners stated that they owned or managed over 1000 acres. The majority (53%, n=68) of general citizens claimed they owned or managed less than 10 acres (Figure 5). The majority of landowners that owned or managed over 1000 acres were those that farmed the land (56%, n=48). Twenty-seven percent (n=23) of those that ranched and farmed the land and 16% (n=14) of ranchers owned or managed over 1000 acres. Twenty-three percent (n=57) of landowners and 4% (n=15) of general citizens claimed that they had black-tailed prairie dogs on their property. Of the landowners that made this claim 8 (17%) were ranchers, 34 (22%) were farmers, and 15 (36%) were ranchers and farmers. Of the 72 respondents that claimed they had black-tailed prairie dogs on their property, only 29 (40%) provided estimates of the number of black-tailed prairie dogs on their property. The mean number of black-tailed prairie dogs on owned or managed property was 659. The range was 10 to 7500 (Figure 6).

The mean distance that respondents lived from a black-tailed prairie dog was 6.9 miles. Proximity of the respondent's residence from a black-tailed prairie

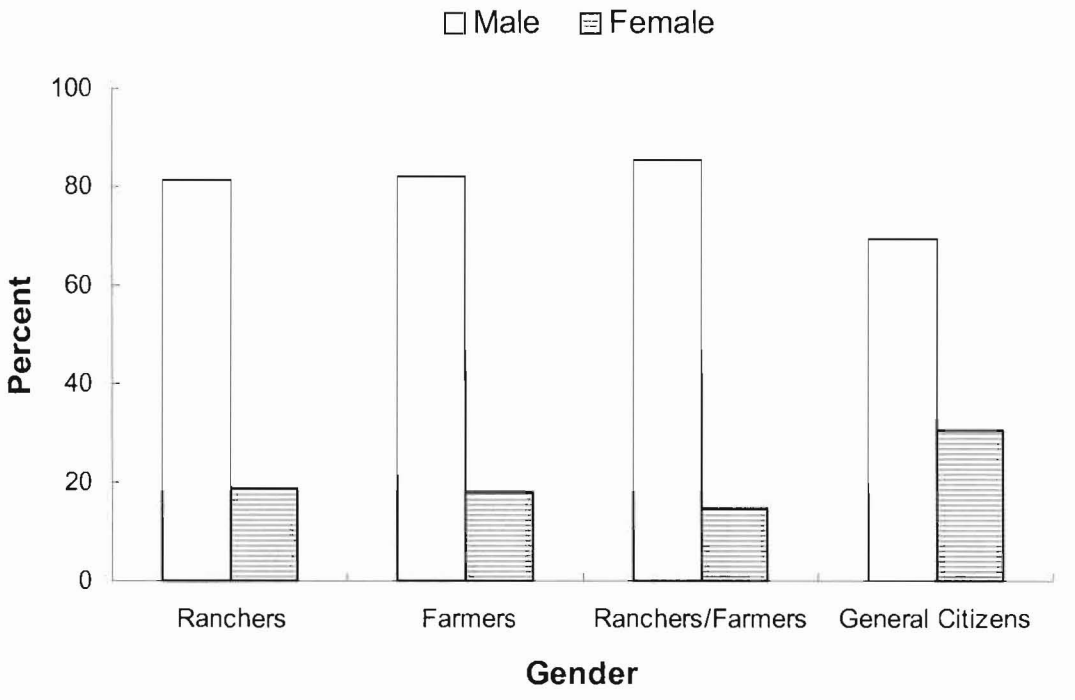

Figure 2. Gender of survey participants.

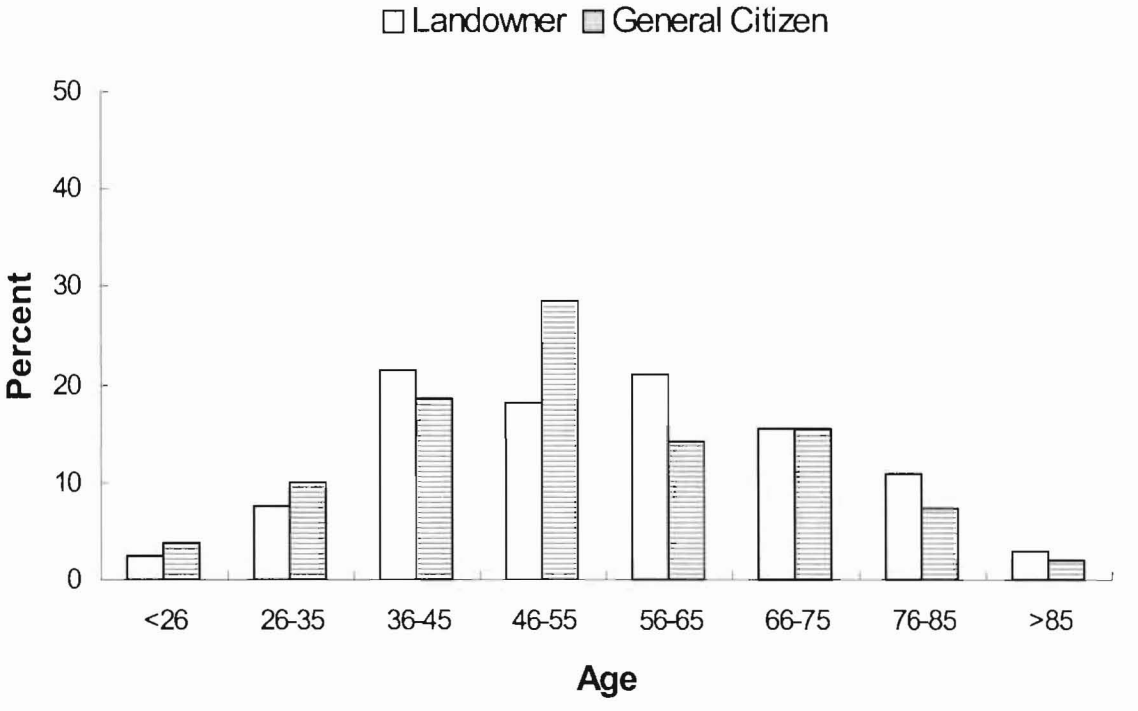

Figure 3. Age of survey participants.

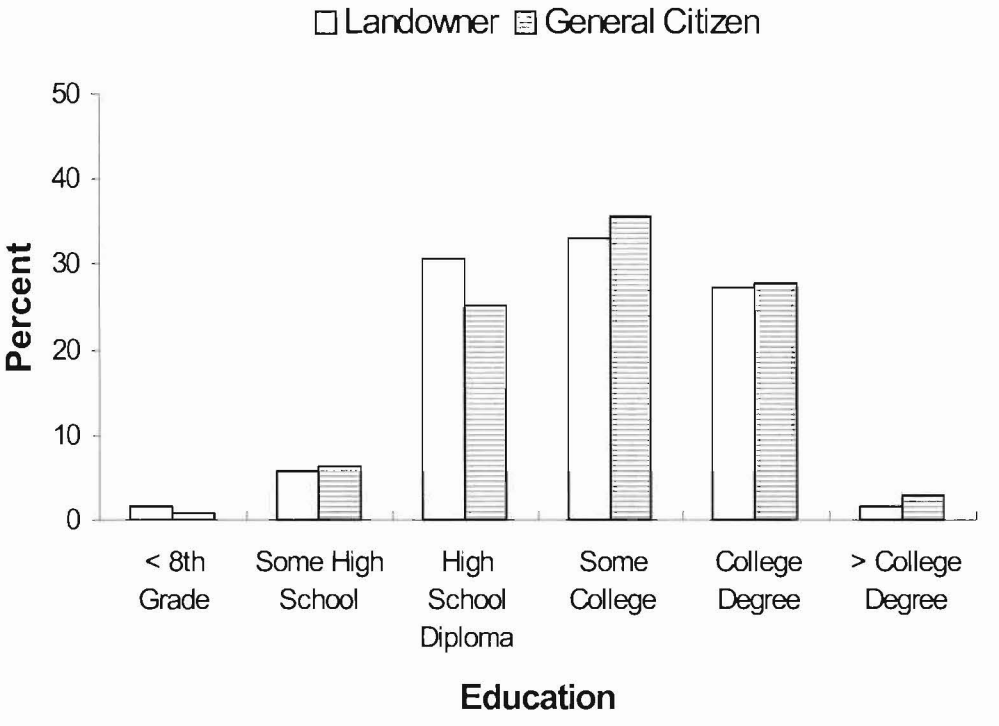

Figure 4. Education levels of survey participants.

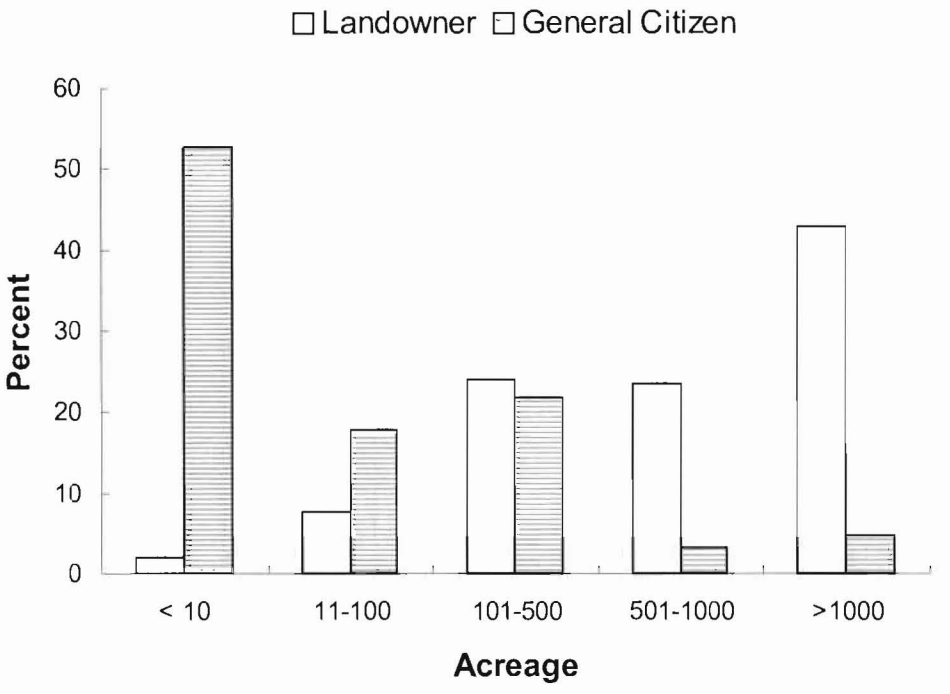

Figure 5. Amount of acreage survey participants owned or managed.

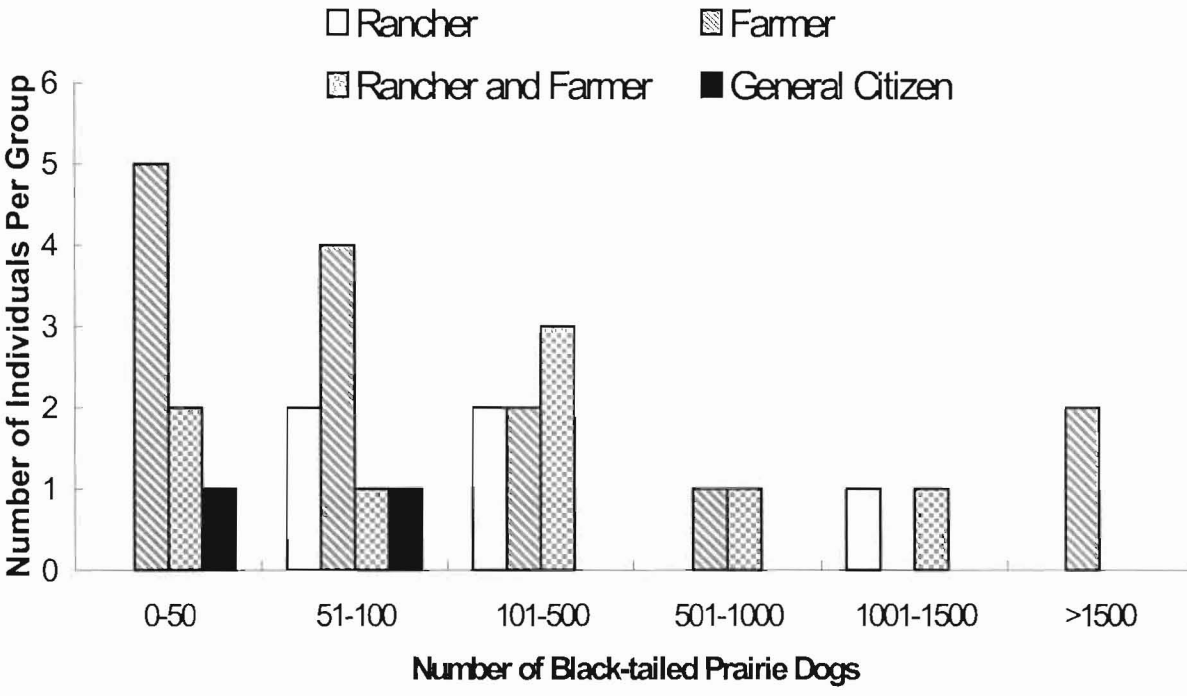

Figure 6. Estimated number of black-tailed prairie dogs on the property of each group.

dog colony ranged from 0.5 miles to 100 miles. The majority (69%, n=145) of general citizens that responded lived within five miles of a black-tailed prairie dog colony. The majority (65%, n=83) of landowners that responded also claimed that they lived within five miles of a black-tailed prairie dog colony (Figure 7).

Of the 685 respondents, 171 (25%) stated that they had controlled black-tailed prairie dogs on their property, of which 24 (14%) were ranchers, 70 (41%) were farmers, 29 (17%) ranched and farmed the land, and 48 (28%) were general citizens. Several methods of control were used, such as poisoning, shooting, gas, or a combination of these methods. Of the 135 respondents that stated they had used some method to control black-tailed prairie dogs on their property, the majority (59%, n=79) used poison (Figure 8).

Thirty-eight percent (n=90) of landowners knew that black-tailed prairie dogs belong to the same family as squirrels. Forty-two percent (n=163) of general citizens did not know to what family black-tailed prairie dogs belonged (Figure 9). The majority of landowners (59%, n=143) and the majority of general citizens (55%, n=220) knew that black-tailed prairie dogs were most active during the daytime (Figure 10). Forty-seven percent of landowners (n=112) and the majority of general citizens (53%, n = 208) were not sure to what disease black-tailed prairie dogs were most susceptible (Figure 11). Thirty-one percent (n=74) of landowners and 32% (n=125) of general citizens stated that black-tailed prairie dogs were most susceptible to rabies (Figure 11). Eighty-five percent of landowners and 63% of general citizens knew that black-tailed prairie dogs fed predominantly on grasses and forbs (Figure 12).

Respondents rated their opinion to 30 statements regarding the black-tailed prairie dog. Respondents stated how strongly they agreed or disagreed with each statement. Statements 8 and 18 were removed from all analyses because of the

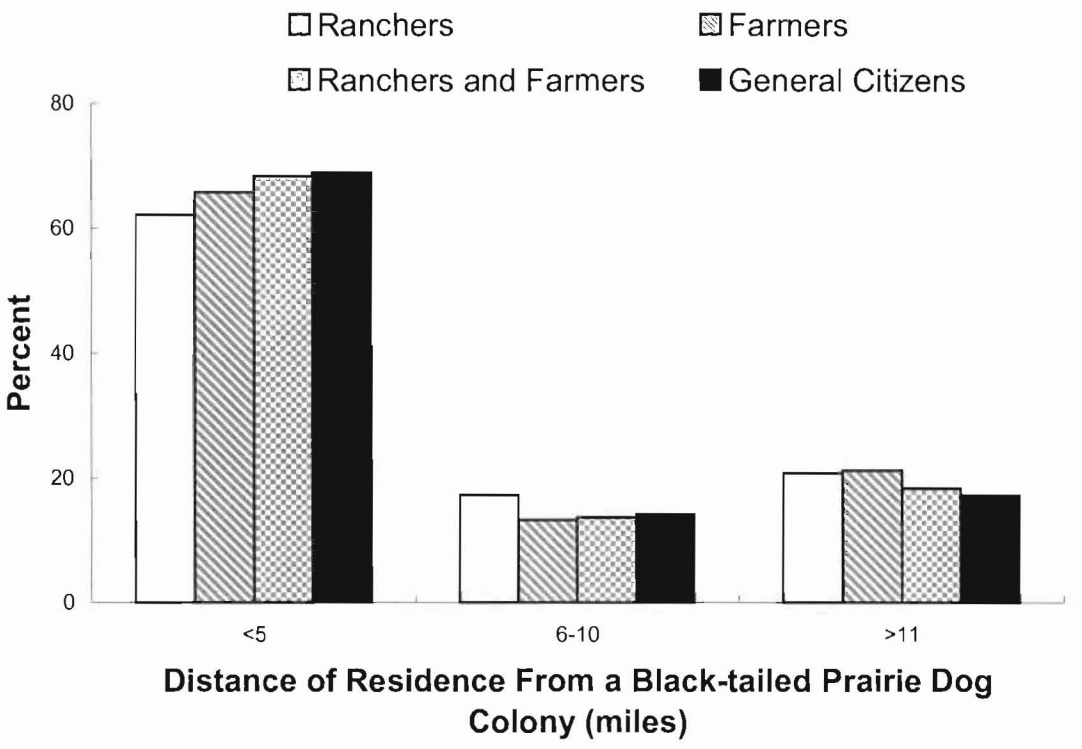

Figure 7. Residence distance from nearest black-tailed prairie dog colony.

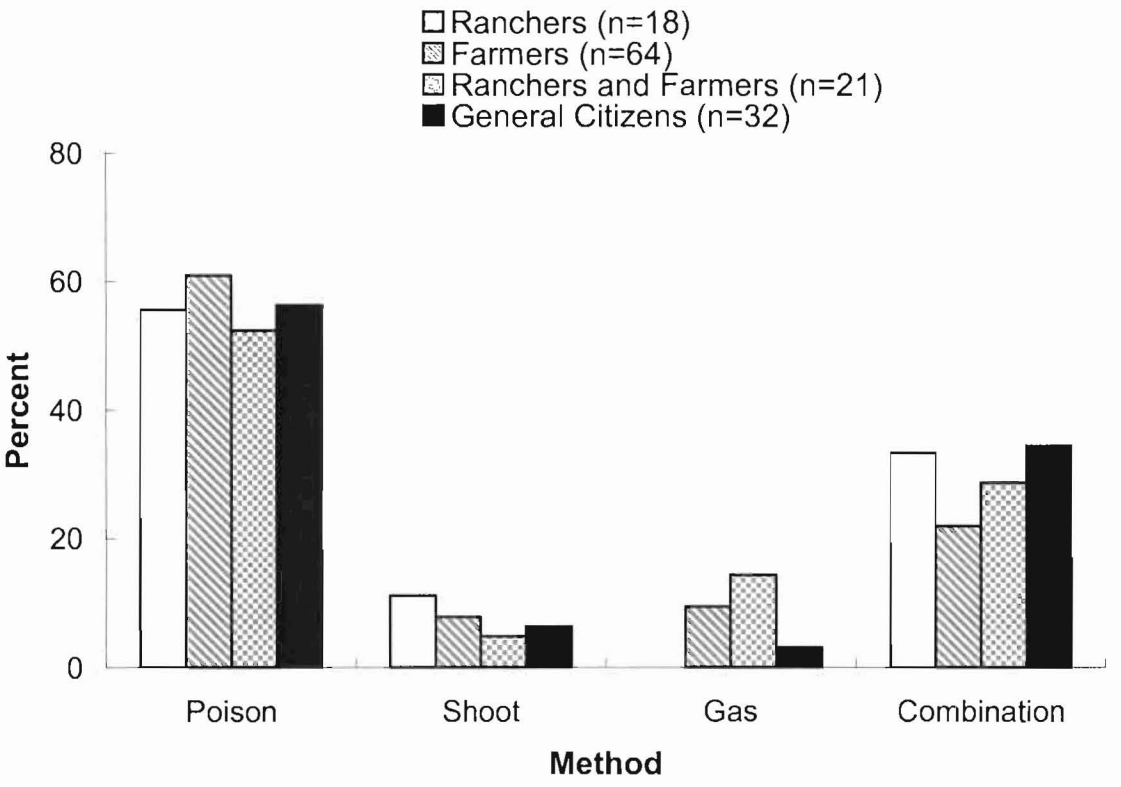

Figure 8. Methods used by respondents to control black-tailed praire dogs.

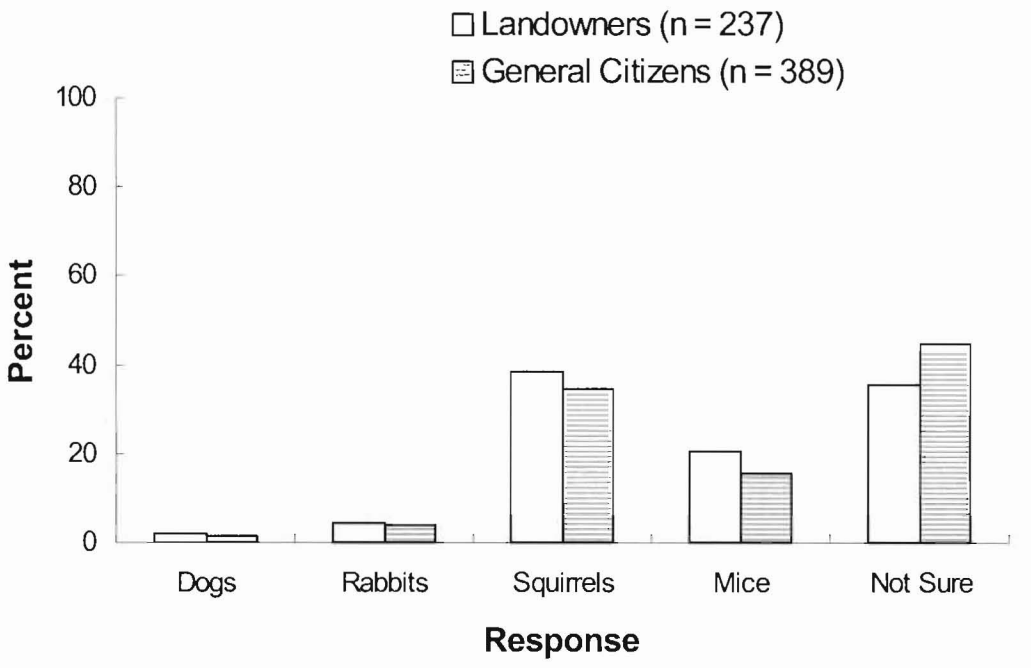

Figure 9. Percent response of participants to the question "To what family do prairie dogs belong?"

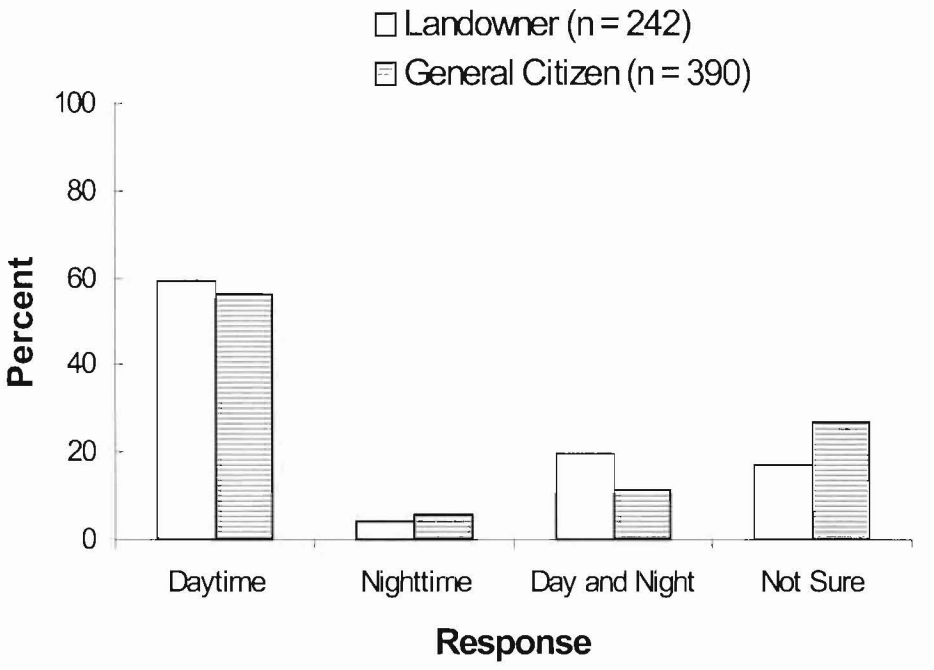

Figure 10. Percent response of participants to the question "When are prairie dogs most active?"

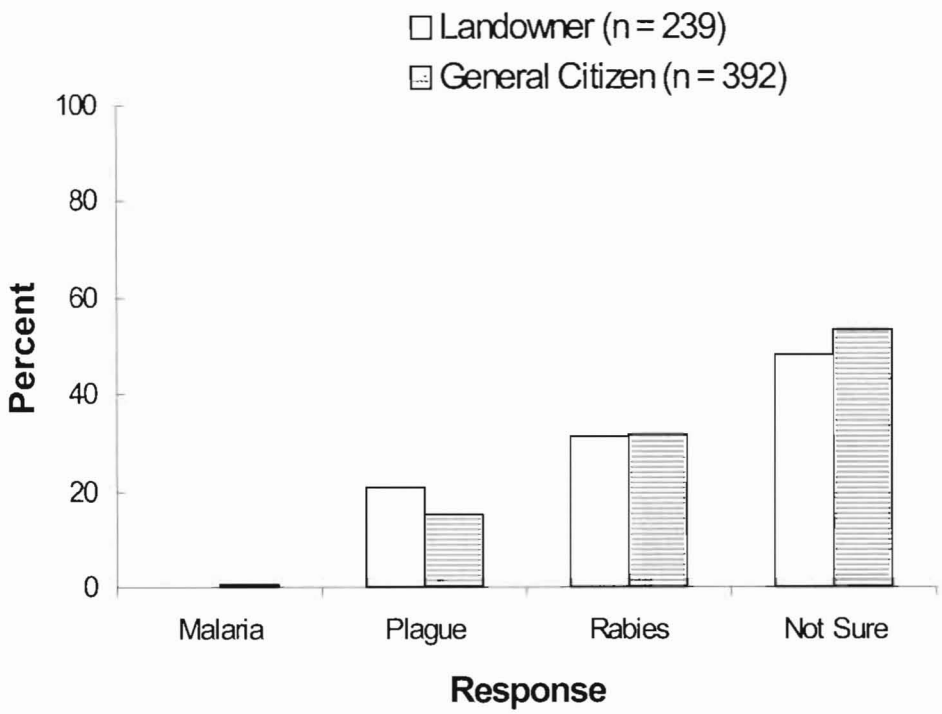

Figure 11. Percent response of participants to the question "To what disease are prairie dogs most susceptible?"

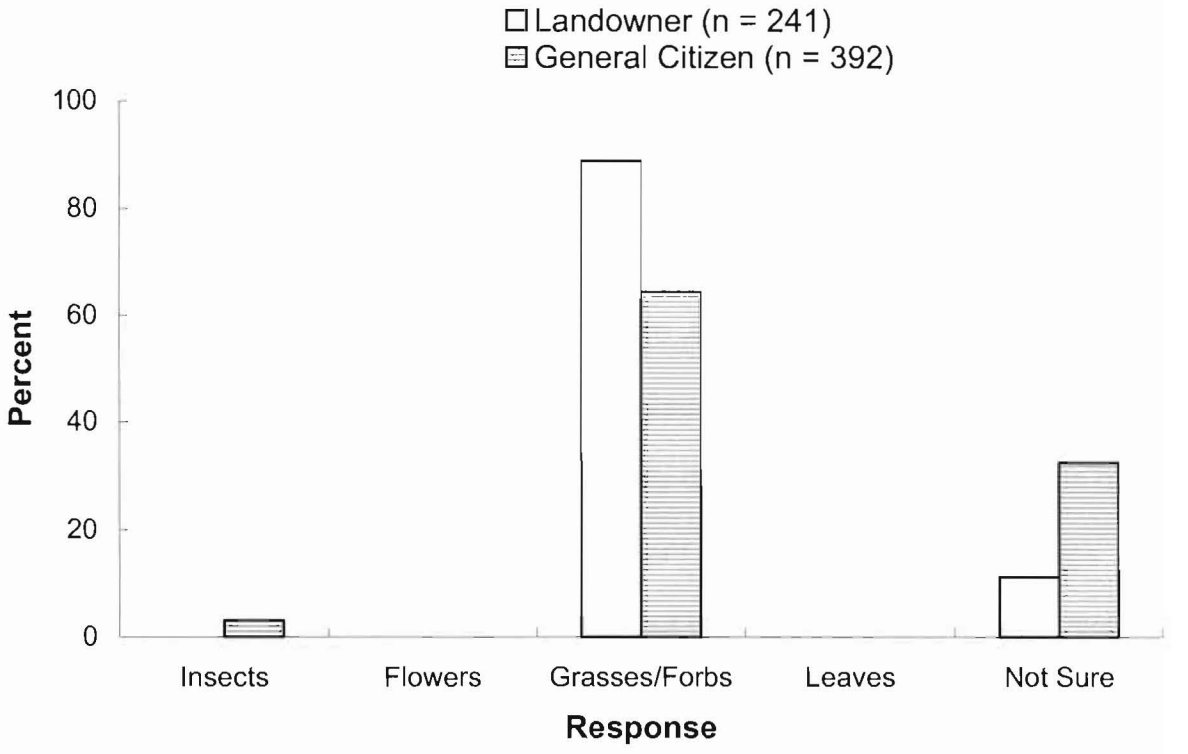

Figure 12. Percent response of participants to the question "On what do prairie dogs predominantly feed?"

ambiguity expressed by the respondents.

There were no significant differences in opinion for the 28 statements among ranchers, farmers, and ranchers and farmers ($P>0.01$) (Table 2). All landowners disagreed that black-tailed prairie dogs should be protected and disagreed more strongly that black-tailed prairie dogs should be protected under the ESA. They disagreed that cattle and black-tailed prairie dogs could coexist possibly because they agreed that black-tailed prairie dogs compete with cattle for forage. Although all landowners disagreed that cattle and black-tailed prairie dogs could coexist, only ranchers agreed that bison and black-tailed prairie dogs coexisted for hundreds of years. They expressed no opinion to the statement that black-tailed prairie dogs were part of the natural environment but disagreed that removing them would disturb the natural environment. Landowners agreed that poisoning black-tailed prairie dogs was the best method of control, disagreed that relocating black-tailed prairie dogs was a good method of control, and expressed no opinion regarding shooting black-tailed prairie dogs as a method of control. Landowners also expressed no opinion to most statements regarding the black-footed ferret.

There were no significant differences in opinion for 27 of the 28 statements between landowners that lived within two miles of a black-tailed prairie dog colony and those that lived three or more miles from a colony ($P>0.01$) (Table 3). However, those who lived within two miles of a colony disagreed more strongly that large black-tailed prairie dog colonies were necessary for the survival of the black-footed Ferret ($F=9.362$, $df=42,79$, $P=0.003$). Although most landowners that claimed to have black-tailed prairie dogs on their property were more negative towards

Table 2. Agreement among landowners relative to statements regarding the black-tailed rairie dog (R = ranchers, F = farmers, R/F = ranchers and farmers). Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance ($P \leq 0.01$). * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	R	49	2.69	1.971		
	F	157	2.46	1.789	0.383	0.682
	R/F	41	2.39	1.730		
Prairie dogs are part of the American heritage.	R	49	4.29	1.947		
	F	156	4.17	1.722	0.162	0.852
	R/F	41	4.07	1.836		
Prairie dogs are a nuisance.	R	49	5.61	1.924		
	F	155	5.59	1.844	0.014	0.987
	R/F	42	5.55	1.953		
Other species that rely on the prairie dog should be protected.	R	49	4.22	1.687		
	F	154	4.29	1.625	1.115	0.330
	R/F	41	3.85	1.838		
Prairie dogs should be protected under the Endangered Species Act.	R	49	2.29	1.826		
	F	156	2.28	1.698	0.109	0.897
	R/F	41	2.14	1.632		
I enjoy watching prairie dogs.	R	49	3.53	2.052		
	F	157	3.65	1.884	0.070	0.932
	R/F	41	3.61	2.060		
Prairie dogs and cattle can coexist.	R	49	2.96	1.914		
	F	157	2.98	1.869	0.013	0.987
	R/F	42	2.93	1.980		
Prairie dogs compete with livestock for forage.	R	49	5.61	1.552		
	F	157	5.34	1.756	2.446	0.089
	R/F	42	5.95	1.324		
Prairie dog burrows cause injury to livestock and horses.	R	49	6.47	0.819		
	F	156	5.97	1.407	2.995	0.052
	R/F	42	6.14	1.072		

(continued).

Table 2 (Continued).

Statement	group	(n)	mean score	sd	F	P
Endangered species that rely on the prairie dog for their survival should be protected.	R	49	3.84	1.477		
	F	154	3.70	1.605	0.145	0.865
	R/F	41	3.78	1.782		
Poisoning is the best method of control.	R	49	5.04	1.779		
	F	157	5.03	1.700	0.135	0.874
	R/F	42	5.19	2.063		
The black-footed ferret relies on the prairie dog for its survival.	R	49	4.47	1.192		
	F	156	4.16	1.252	1.185	0.307
	R/F	41	4.15	1.424		
Prairie dogs populations are low enough to warrant protection.	R	49	2.39	1.669		
	F	157	2.66	1.720	1.246	0.230
	R/F	42	2.24	1.559		
Relocating prairie dogs to another area is the best method of control.	R	48	3.04	1.935		
	F	156	3.19	1.927	3.014	0.051
	R/F	42	2.38	1.667		
Grasses on prairie dog colonies are more nutritious than grasses off prairie dog colonies.	R	48	2.92	1.648		
	F	154	2.89	1.631	0.439	0.645
	R/F	41	2.63	1.670		
Prairie dogs provide little benefit to the environment.	R	48	4.92	1.555		
	F	156	4.93	1.760	0.394	0.675
	R/F	42	5.19	1.954		
Shooting prairie dogs should be used to control them.	R	49	4.57	1.947		
	F	157	4.37	1.729	0.580	0.561
	R/F	42	4.67	1.790		
If prairie dogs are not protected, they will become extinct in the near future.	R	47	3.15	1.757		
	F	151	3.21	1.731	0.338	0.714
	R/F	40	2.95	2.050		
Prairie dogs should be protected.	R	47	2.70	1.706		
	F	154	2.83	1.759	0.095	0.909
	R/F	40	2.80	1.924		

(Continued).

Table 2 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret should be protected.	R	46	3.87	1.825		
	F	153	4.17	1.538	0.634	0.531
	R/F	39	4.08	1.476		
People who live near prairie dog towns are at risk for disease.	R	47	4.17	1.723		
	F	152	4.39	1.549	0.340	0.712
	R/F	40	4.30	1.951		
Landowners should have the choice to remove or control prairie dogs from their property.	R	47	6.19	1.555		
	F	154	6.25	1.213	0.457	0.633
	R/F	41	6.44	1.184		
I enjoy the presence of eagles and hawks.	R	47	5.32	1.562		
	F	154	5.21	1.454	0.101	0.904
	R/F	40	5.23	1.544		
Removing prairie dogs will disturb the natural environment.	R	47	3.30	1.731		
	F	154	3.27	1.712	0.773	0.463
	R/F	41	2.90	2.010		
Prairie dogs are part of the natural environment.	R	47	4.32	1.670		
	F	152	4.32	1.618	1.550	0.214
	R/F	40	3.80	2.066		
Bison coexisted with prairie dogs for hundreds of years.	R	47	5.02	1.467		
	F	153	4.78	1.267	1.674	0.190
	R/F	39	4.49	1.502		
Prairie dogs should not be protected.	R	47	5.43	1.839		
	F	154	5.12	1.776	0.862	0.424
	R/F	40	5.45	1.739		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	R	47	3.81	1.296		
	F	153	3.56	1.342	0.756	0.471
	R/F	41	3.46	1.762		

Table 3. Agreement between landowners that lived in close proximity (≤ 2 miles) to a black-tailed prairie dog colony and those that lived further away (≥ 3 miles) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤ 0.01). * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	≤ 2 miles	43	2.53	2.016	0.859	0.356
	≥ 3 miles	82	2.87	1.831		
Prairie dogs are part of the American heritage.	≤ 2 miles	43	3.95	1.988	1.667	0.199
	≥ 3 miles	82	4.40	1.770		
Prairie dogs are a nuisance.	≤ 2 miles	43	5.58	1.979	0.174	0.677
	≥ 3 miles	80	5.44	1.735		
Other species that rely on the prairie dog should be protected.	≤ 2 miles	43	3.86	1.754	2.636	0.107
	≥ 3 miles	82	4.37	1.599		
Prairie dogs should be protected under the Endangered Species Act.	≤ 2 miles	43	2.07	1.549	1.956	0.164
	≥ 3 miles	82	2.51	1.744		
I enjoy watching prairie dogs.	≤ 2 miles	43	3.21	2.099	5.507	0.021
	≥ 3 miles	82	4.09	1.919		
Prairie dogs and cattle can coexist.	≤ 2 miles	43	2.70	1.909	2.241	0.137
	≥ 3 miles	82	3.26	2.017		
Prairie dogs compete with livestock for forage.	≤ 2 miles	43	5.56	1.637	0.212	0.646
	≥ 3 miles	82	5.41	1.663		
Prairie dog burrows cause injury to livestock and horses.	≤ 2 miles	42	6.12	1.214	0.009	0.925
	≥ 3 miles	82	6.10	1.182		
Endangered species that rely on the prairie dog for their l survival should be protected.	≤ 2 miles	43	3.42	1.665	2.126	0.147
	≥ 3 miles	81	3.86	1.595		
Poisoning is the best method of control.	≤ 2 miles	43	5.12	1.762	0.208	0.649
	≥ 3 miles	82	4.96	1.788		

(Continued).

Table 3 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies on the prairie dog for its survival.	≤ 2 miles	42	4.05	1.287	1.265	0.263
	≥ 3 miles	82	4.30	1.162		
Prairie dog populations are low enough to warrant protection.	≤ 2 miles	43	2.33	1.569	2.542	0.113
	≥ 3 miles	82	2.82	1.671		
Relocating prairie dogs to another area is the best method for control.	≤ 2 miles	43	3.02	1.858	0.335	0.564
	≥ 3 miles	82	3.23	1.939		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	≤ 2 miles	42	2.52	1.534	5.606	0.019
	≥ 3 miles	82	3.26	1.676		
Prairie dogs provide little benefit to the environment.	≤ 2 miles	41	5.34	1.667	4.103	0.045
	≥ 3 miles	82	4.71	1.622		
Shooting prairie dogs should be used as a means to control them.	≤ 2 miles	43	4.12	2.002	2.946	0.089
	≥ 3 miles	82	4.68	1.609		
If prairie dogs are not protected, they will become extinct in the future.	≤ 2 miles	43	2.77	1.702	4.497	0.036
	≥ 3 miles	77	3.47	1.752		
Prairie dogs should be protected.	≤ 2 miles	43	2.47	1.764	4.572	0.035
	≥ 3 miles	79	3.16	1.705		
The black-footed ferret should be protected.	≤ 2 miles	42	4.26	1.609	0.304	0.582
	≥ 3 miles	79	4.09	1.666		
People who live near prairie dog towns are at risk for disease.	≤ 2 miles	43	4.23	1.913	0.000	0.996
	≥ 3 miles	78	4.23	1.562		
Landowners should have the choice to remove or control prairie dogs from their property.	≤ 2 miles	43	6.23	1.172	0.941	0.334
	≥ 3 miles	80	6.43	0.978		

(Continued).

Table 3 (Continued).

Statement	group	(n)	mean score	sd	F	P
I enjoy the presence of eagles and hawks.	≤ 2 miles	42	4.98	1.615	1.147	0.286
	≥ 3 miles	80	5.29	1.477		
Removing prairie dogs will disturb the natural environment.	≤ 2 miles	43	2.86	1.820	5.466	0.021
	≥ 3 miles	80	3.61	1.634		
Prairie dogs are part of the natural environment.	≤ 2 miles	41	4.10	1.972	3.742	0.055
	≥ 3 miles	80	4.71	1.469		
Bison coexisted with prairie dogs for hundreds of years.	≤ 2 miles	41	4.54	1.583	3.036	0.084
	≥ 3 miles	80	5.00	1.273		
Prairie dogs should not be protected.	≤ 2 miles	42	5.57	1.699	3.008	0.085
	≥ 3 miles	80	5.01	1.688		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	≤ 2 miles	43	3.05	1.542	9.362	0.003*
	≥ 3 miles	80	3.81	1.192		

black-tailed prairie dogs, no significant differences were detected for 26 of the 28 statements ($P>0.01$) (Table 4). Landowners with black-tailed prairie dogs on their property disagreed more strongly that black-tailed prairie dogs were part of the natural environment ($F=7.967$, $df=55,178$, $P=0.005$) than those who did not have black-tailed prairie dogs on their property. Landowners with black-tailed prairie dogs on their property also disagreed more strongly that grasses on black-tailed prairie dog colonies are more nutritious than grasses off colonies than did those without black-tailed prairie dogs on their property ($F=7.890$, $df=56,181$, $P=0.010$). There were significant differences observed for 12 of the 28 statements between landowners that lived in counties with a high abundance of black-tailed prairie dog colonies and those who lived in counties with a low abundance of black-tailed prairie dog colonies ($P\leq0.01$) (Table 5). For example, landowners who lived in counties with a high abundance of black-tailed prairie dog colonies disagreed more strongly that black-tailed prairie dogs should be protected ($F=7.444$, $df=29,202$, $P=0.007$), that black-tailed prairie dog numbers were low enough to warrant protection ($F=11.529$, $df=29,209$, $P=0.001$), and that black-tailed prairie dogs and cattle could coexist ($F=7.104$, $df=29,208$, $P=0.008$) than those who lived in low abundance counties.

Older (≥54 years) landowners agreed more strongly that black-tailed prairie dogs provided little benefit to the environment than younger (≤48 years) landowners ($F=8.640$, $df=83,124$, $P=0.004$). They also disagreed more strongly that black-tailed prairie dogs were part of the natural environment ($F=9.501$, $df=81,122$, $P=0.002$) (Table 6). No differences were detected between male and female landowners

Table 4. Agreement between landowners that stated they had black-tailed prairie dogs on their property (Pd-on) and those that did not have black-tailed prairie dogs on their property (Pd-off) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance ($P \leq 0.01$). * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	Pd-on	56	2.11	1.670	3.765	0.050
	Pd-off	187	2.64	1.848		
Prairie dogs are part of the American heritage.	Pd-on	56	3.80	1.813	3.044	0.081
	Pd-off	186	4.28	1.776		
Prairie dogs are a nuisance.	Pd-on	57	6.02	1.695	3.729	0.055
	Pd-off	185	5.48	1.874		
Other species that rely on the prairie dog should be protected.	Pd-on	54	4.20	1.805	0.002	0.969
	Pd-off	186	4.19	1.646		
Prairie dogs should be protected under the Endangered Species Act.	Pd-on	57	1.77	1.488	5.965	0.015
	Pd-off	186	2.40	1.750		
I enjoy watching prairie dogs.	Pd-on	56	3.13	1.908	4.878	0.028
	Pd-off	187	3.78	1.941		
Prairie dogs and cattle can coexist.	Pd-on	57	2.79	1.878	0.678	0.411
	Pd-off	187	3.03	1.913		
Prairie dogs compete with livestock for forage.	Pd-on	57	5.67	1.640	0.816	0.295
	Pd-off	187	5.44	1.679		
Prairie dog burrows cause injury to livestock and horses.	Pd-on	57	6.25	1.229	1.100	0.295
	Pd-off	186	6.04	1.290		
Endangered species that rely on the prairie dog for their survival should be protected.	Pd-on	57	3.39	1.688	3.651	0.057
	Pd-off	183	3.85	1.585		
Poisoning is the best method of control.	Pd-on	57	5.12	1.871	0.056	0.812
	Pd-off	187	5.06	1.751		
The black-footed ferret relies on the prairie dog for its survival.	Pd-on	56	4.27	1.590	0.125	0.724
	Pd-off	186	4.20	1.171		

(Continued).

Table 4 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dog populations are low enough to warrant protection.	Pd-on	57	2.05	1.684	6.089	0.014
	Pd-off	187	2.67	1.658		
Relocating prairie dogs to another area is the best method for control.	Pd-on	57	2.65	1.847	2.803	0.095
	Pd-off	185	3.13	1.909		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	Pd-on	57	2.37	1.622	7.890	0.010*
	Pd-off	182	3.01	1.625		
Prairie dogs provide little benefit to the environment.	Pd-on	57	5.14	2.022	0.756	0.386
	Pd-off	185	4.91	1.677		
Shooting prairie dogs should be used as a means to control them.	Pd-on	57	4.02	1.791	0.061	0.804
	Pd-off	187	4.47	1.788		
If prairie dogs are not protected, they will become extinct in the future.	Pd-on	55	2.80	1.809	2.817	0.095
	Pd-off	179	3.26	1.781		
Prairie dogs should be protected.	Pd-on	56	2.32	1.696	5.352	0.022
	Pd-off	181	2.94	1.782		
The black-footed ferret should be protected.	Pd-on	55	4.05	1.557	0.089	0.766
	Pd-off	180	4.13	1.607		
People who live near prairie dog towns are at risk for disease.	Pd-on	55	4.55	1.719	1.289	0.257
	Pd-off	180	4.26	1.638		
Landowners should have the choice to remove or control prairie dogs from their property.	Pd-on	56	6.14	1.710	0.701	0.403
	Pd-off	182	6.31	1.129		
I enjoy the presence of eagles and hawks.	Pd-on	56	5.45	1.306	1.705	0.193
	Pd-off	181	5.15	1.540		
Removing prairie dogs will disturb the natural environment.	Pd-on	56	2.79	1.914	3.938	0.048
	Pd-off	182	3.32	1.707		
Prairie dogs are part of the natural environment.	Pd-on	56	3.68	1.908	7.967	0.005*
	Pd-off	179	4.41	1.631		

(Continued).

Table 4 (Continued).

Statement	group	(n)	mean score	sd	F	P
Bison coexisted with prairie dogs for hundreds of years.	Pd-on	55	4.73	1.367	0.140	0.709
	Pd-off	180	4.81	1.358		
Prairie dogs should not be protected.	Pd-on	55	5.70	1.617	5.116	0.025
	Pd-off	181	5.08	1.819		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	Pd-on	56	3.57	1.512	0.008	0.928
	Pd-off	181	3.59	1.394		

Table 5. Agreement between landowners that lived in counties with a high abundance of black-tailed prairie dog colonies (≥30) and those that lived in low abundance counties (<30) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01). * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	High	30	1.50	1.196	13.366	0.000*
	Low	209	2.67	1.850		
Prairie dogs are part of the American heritage.	High	30	3.37	1.847	8.191	0.005*
	Low	208	4.29	1.770		
Prairie dogs are a nuisance.	High	30	5.73	2.212	0.600	0.439
	Low	208	5.60	1.783		
Other species that rely on the prairie dog should be protected.	High	30	3.57	1.755	5.734	0.017
	Low	206	4.29	1.627		
Prairie dogs should be protected under the Endangered Species Act.	High	30	1.43	0.935	9.204	0.003*
	Low	209	2.37	1.755		
I enjoy watching prairie dogs.	High	30	2.20	1.710	24.752	0.000*
	Low	209	3.86	1.888		
Prairie dogs and cattle can coexist.	High	30	2.17	1.464	7.104	0.008*
	Low	210	3.07	1.924		
Prairie dogs compete with livestock for forage.	High	30	5.87	1.717	1.561	0.213
	Low	210	5.43	1.657		
Prairie dog burrows cause injury to livestock and horses.	High	30	6.17	1.599	0.012	0.914
	Low	209	6.08	1.230		
Endangered species that rely on the prairie dog for their survival should be protected.	High	30	3.20	1.400	6.431	0.012
	Low	209	3.90	1.601		
Poisoning is the best method of control.	High	30	5.50	1.871	2.574	0.110
	Low	210	5.01	1.751		
The black-footed ferret relies on the prairie dog for its survival.	High	29	3.72	1.437	6.858	0.009*
	Low	209	4.27	1.243		

(Continued).

Table 5 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dog numbers are low enough to warrant protection.	High	30	1.67	1.322	11.529	0.001*
	Low	210	2.68	1.706		
Relocating prairie dogs to another area is the best method for control.	High	30	2.53	1.814	3.817	0.052
	Low	208	3.11	1.921		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	High	29	2.34	1.542	6.303	0.013
	Low	206	2.96	1.645		
Prairie dogs provide little benefit to the environment.	High	29	5.72	1.386	6.936	0.009*
	Low	209	4.86	1.720		
Shooting prairie dogs should be used as a means to control them.	High	30	4.47	1.961	0.004	0.948
	Low	210	4.42	1.749		
If prairie dogs are not protected, they will become extinct in the future.	High	29	2.69	1.745	3.324	0.070
	Low	201	3.23	1.797		
Prairie dogs should be protected.	High	30	2.03	1.712	7.444	0.007*
	Low	203	2.95	1.761		
The black-footed ferret should be protected.	High	29	4.34	1.542	0.043	0.835
	Low	202	4.11	1.584		
People who live near prairie dog towns are at risk for disease.	High	28	4.96	1.856	5.763	0.017
	Low	203	4.22	1.615		
Landowners should have the choice to remove or control prairie dogs from their property.	High	30	6.67	0.959	4.417	0.037
	Low	204	6.21	1.327		
I enjoy the presence of eagles and hawks.	High	30	5.40	1.248	0.008	0.930
	Low	203	5.23	1.516		
Removing prairie dogs will disturb the natural environment.	High	30	2.37	1.629	9.333	0.003*
	Low	204	3.33	1.777		

(Continued).

Table 5 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are part of the natural environment.	High	29	3.24	1.883	12.601	0.000*
	Low	202	4.38	1.669		
Bison coexisted with prairie dogs for hundreds of years.	High	28	4.43	1.399	2.794	0.096
	Low	203	4.82	1.354		
Prairie dogs should not be protected.	High	30	6.00	1.597	8.342	0.004*
	Low	203	5.09	1.793		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	High	30	3.33	1.373	1.857	0.174
	Low	203	3.63	1.438		

Table 6. Agreement between younger (≤ 48 years) and older (≥ 54 years) landowners relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01) * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	≤ 48	84	2.83	1.685	4.503	0.035
	≥ 54	126	2.30	1.839		
Prairie dogs are part of the American heritage.	≤ 48	84	4.30	1.612	0.599	0.440
	≥ 54	125	4.10	1.874		
Prairie dogs are a nuisance.	≤ 48	82	5.72	1.425	0.247	0.619
	≥ 54	127	5.59	2.048		
Other species that rely on the prairie dog should be protected.	≤ 48	83	4.41	1.490	2.961	0.087
	≥ 54	124	4.01	1.741		
Prairie dogs should be protected under the Endangered Species Act.	≤ 48	84	2.30	1.551	0.124	0.725
	≥ 54	126	2.21	1.755		
I enjoy watching prairie dogs.	≤ 48	84	3.98	1.728	4.795	0.030
	≥ 54	126	3.37	2.093		
Prairie dogs and cattle can coexist.	≤ 48	84	3.17	1.769	2.341	0.127
	≥ 54	127	2.76	1.937		
Prairie dogs compete with livestock for forage.	≤ 48	84	5.25	1.649	1.548	0.215
	≥ 54	127	5.54	1.694		
Prairie dog burrows cause injury to livestock and horses.	≤ 48	84	6.06	1.134	0.338	0.562
	≥ 54	126	6.16	1.261		
Endangered species that rely on the prairie dog for their survival should be protected.	≤ 48	82	3.96	1.519	1.282	0.259
	≥ 54	125	3.70	1.671		
Poisoning is the best method of control.	≤ 48	84	4.64	1.808	4.666	0.032
	≥ 54	127	5.18	1.748		

(Continued).

Table 6 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies on the prairie dog for its survival.	≤ 48	83	4.18	1.191	0.076	0.784
	≥ 54	126	4.23	1.322		
Prairie dog populations are low enough to warrant protection.	≤ 48	84	2.80	1.619	2.744	0.099
	≥ 54	127	2.41	1.697		
Relocating prairie dogs to another area is the best method for control.	≤ 48	84	3.20	1.734	0.136	0.713
	≥ 54	126	3.10	2.023		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	≤ 48	83	3.20	1.463	6.484	0.012
	≥ 54	123	2.63	1.686		
Prairie dogs provide little benefit to the environment.	≤ 48	84	4.61	1.552	8.640	0.004*
	≥ 54	125	5.30	1.761		
Shooting prairie dogs should be used as a means to control them.	≤ 48	84	4.77	1.638	4.658	0.032
	≥ 54	127	4.24	1.854		
If prairie dogs are not protected, they will become extinct in the future.	≤ 48	81	3.21	1.618	0.454	0.501
	≥ 54	122	3.04	1.829		
Prairie dogs should be protected.	≤ 48	82	2.96	1.636	1.272	0.261
	≥ 54	123	2.68	1.812		
The black-footed ferret should be protected.	≤ 48	81	4.05	1.572	0.121	0.729
	≥ 54	122	4.13	1.686		
People who live near prairie dog towns are at risk for disease.	≤ 48	81	4.10	1.480	2.835	0.094
	≥ 54	122	4.50	1.773		
Landowners should have the choice to remove or control prairie dogs from their property.	≤ 48	82	6.18	1.306	0.406	0.525
	≥ 54	123	6.30	1.293		
I enjoy the presence of eagles and hawks.	≤ 48	82	5.30	1.411	0.992	0.320
	≥ 54	123	5.09	1.584		

(Continued).

Table 6 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	≤ 48	82	3.54	1.650	6.372	0.012
	≥ 54	123	2.93	1.723		
Prairie dogs are part of the natural environment.	≤ 48	82	4.62	1.358	9.501	0.002*
	≥ 54	123	3.89	1.828		
Bison coexisted with prairie dogs for hundreds of years.	≤ 48	82	4.75	1.356	0.006	0.936
	≥ 54	120	4.77	1.334		
Prairie dogs should not be protected.	≤ 48	81	5.02	1.707	0.972	0.325
	≥ 54	121	5.28	1.848		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	≤ 48	81	3.78	1.225	2.006	0.158
	≥ 54	123	3.50	1.490		

(P>0.01) (Table 7). No differences were detected for 27 of the 28 statements between landowners with a high school diploma and a college degree (P>0.01) (Table 8). Landowners with a high school diploma agreed more strongly that black-tailed prairie dogs provide little benefit to the environment than those with a college degree (F=7.543, df=72,65, P=0.007).

Despite age, proximity of the respondent's residence to a black-tailed prairie dog town, county residence, sex, education level, or presence of black-tailed prairie dogs on the respondent's property, landowners disagreed that black-tailed prairie dogs should be protected and disagreed more strongly that they should be protected under the ESA. They also disagreed that black-tailed prairie dogs and cattle could coexist. Most expressed no opinion in response to statements such as black-tailed prairie dog colonies and the risk of disease to humans, the black-tailed prairie dogs role in the American heritage, as well as black-tailed prairie dog influence and the black-footed ferret. Landowners agreed that black-tailed prairie dogs compete with cattle for forage, their burrows caused injury to livestock and horses, and that black-tailed prairie dogs were a nuisance. Most agreed that they enjoyed watching eagles and hawks. Landowners might interpret the presence of eagles and hawks as predators that will feed on black-tailed prairie dogs, thereby reducing their numbers.

Results showed no significant differences in knowledge level among ranchers, farmers, and ranchers and farmers (P>0.01) (Table 9). The majority (>50%) knew when black-tailed prairie dogs were most active and the predominant food source for the black-tailed prairie dog. Less than 50% knew to what family black-tailed prairie

Table 7. Differences in agreement between male (M) and female (F) landowners relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance ($P \leq 0.01$). * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	M	201	2.48	1.800	0.138	0.711
	F	40	2.60	1.959		
Prairie dogs are part of the American heritage.	M	200	4.09	1.822	2.017	0.157
	F	40	4.53	1.467		
Prairie dogs are a nuisance.	M	199	5.59	1.899	0.021	0.886
	F	41	5.63	1.714		
Others species rely on prairie dogs for their survival.	M	200	4.18	1.669	0.197	0.658
	F	38	4.32	1.646		
Prairie dogs should be protected under the Endangered Species Act.	M	200	2.19	1.722	2.358	0.126
	F	41	2.63	1.624		
I enjoy watching prairie dogs.	M	201	3.54	1.952	2.319	0.129
	F	40	4.05	1.907		
Prairie dogs and cattle can coexist.	M	201	2.91	1.912	0.937	0.334
	F	41	3.22	1.796		
Prairie dogs compete with livestock for forage.	M	201	5.61	1.618	5.561	0.019
	F	41	4.95	1.717		
Prairie dog burrows cause injury to livestock and horses.	M	200	6.16	1.141	3.875	0.050
	F	41	5.73	1.775		
Endangered species that rely on the prairie dog for their survival should be protected.	M	198	3.77	1.636	0.111	0.740
	F	40	3.68	1.457		
Poisoning is the best method of control.	M	201	5.16	1.762	3.895	0.050
	F	41	4.56	1.803		
The black-footed ferret relies on the prairie dog for its survival.	M	201	4.22	1.304	0.041	0.839
	F	40	4.18	1.130		

(Continued).

Table 7 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dog numbers are low enough to warrant protection.	M	201	2.46	1.676	2.142	0.145
	F	41	2.88	1.676		
Relocating prairie dogs to another area is the best method for control.	M	201	2.00	1.927	0.619	0.432
	F	39	3.26	1.743		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	M	197	2.83	1.645	0.766	0.382
	F	40	3.08	1.559		
Prairie dogs provide little benefit to the environment.	M	200	5.08	1.736	3.957	0.048
	F	40	4.47	1.768		
Shooting prairie dogs should be used as a means to control them.	M	201	4.51	1.758	1.597	0.208
	F	41	4.12	1.887		
If prairie dogs are not protected, they will become extinct in the future.	M	191	3.02	1.780	4.760	0.030
	F	41	3.68	1.680		
Prairie dogs should be protected.	M	194	2.69	1.724	4.003	0.047
	F	41	3.29	1.874		
The black-footed ferret should be protected.	M	193	4.11	1.621	0.058	0.811
	F	40	4.18	1.412		
People who live near prairie dog towns are at risk for disease.	M	192	4.33	1.638	0.003	0.954
	F	41	4.32	1.635		
Landowners should have the choice to remove or control prairie dogs from their property.	M	195	6.28	1.271	0.251	0.617
	F	41	6.17	1.395		
I enjoy the presence of eagles and hawks.	M	195	5.27	1.479	0.896	0.345
	F	41	5.02	1.541		
Removing prairie dogs will disturb the natural environment.	M	195	3.14	1.743	0.699	0.404
	F	41	3.39	1.801		
Prairie dogs are part of the natural environment.	M	192	4.27	1.693	0.820	0.366
	F	41	4.00	1.761		

(Continued).

Table 7 (Continued).

Statement	group	(n)	mean score	sd	F	P
Bison coexisted with prairie dogs for hundreds of years.	M	193	4.79	1.362	0.638	0.425
	F	40	4.60	1.297		
Prairie dogs should not be protected.	M	195	5.32	1.753	2.343	0.127
	F	41	4.85	1.824		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	M	194	3.58	1.406	0.407	0.524
	F	41	3.73	1.415		

Table 8. Agreement between landowners with a high school diploma (HSD) and those with a college degree (CD) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance ($P \leq 0.01$). * = significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	HSD	73	2.51	1.819	1.602	0.208
	CD	66	2.91	1.927		
Prairie dogs are part of the American heritage.	HSD	72	4.13	1.906	0.315	0.576
	CD	66	4.30	1.814		
Prairie dogs are a nuisance.	HSD	74	5.64	1.772	1.403	0.238
	CD	65	5.26	1.947		
Other species that rely on the prairie dog should be protected.	HSD	71	4.00	1.740	3.620	0.059
	CD	66	4.52	1.395		
Prairie dogs should be protected under the Endangered Species Act.	HSD	73	2.37	1.696	0.073	0.787
	CD	66	2.29	1.871		
I enjoy watching prairie dogs.	HSD	73	3.48	2.135	2.265	0.135
	CD	66	4.00	1.922		
Prairie dogs and cattle can coexist.	HSD	74	3.01	1.934	0.642	0.424
	CD	66	3.27	1.886		
Prairie dogs compete with livestock for forage.	HSD	74	5.84	1.395	3.483	0.064
	CD	66	5.35	1.705		
Prairie dog burrows cause injury to livestock and horses.	HSD	74	6.22	1.010	0.219	0.641
	CD	66	6.14	1.006		
Endangered species that rely on the prairie dog for their survival should be protected.	HSD	73	3.79	1.716	0.017	0.897
	CD	65	3.83	1.537		
Poisoning is the best method of control.	HSD	74	5.12	1.872	0.816	0.368
	CD	66	4.85	1.685		
Black-footed ferret relies on the prairie dog for its survival.	HSD	74	4.35	1.308	0.186	0.667
	CD	66	4.26	1.256		

(Continued).

Table 8 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dog populations are low enough to warrant protection.	HSD	74	2.57	1.829	0.031	0.860
	CD	66	2.62	1.743		
Relocating prairie dogs to another area is the best method for control.	HSD	74	2.88	1.965	0.081	0.776
	CD	64	2.97	1.727		
Grasses on prairie dog colonies are more nutritious than grasses off colonies	HSD	72	2.85	1.692	0.025	0.874
	CD	64	2.89	1.471		
Prairie dogs provide little benefit to the environment.	HSD	73	5.18	1.670	7.543	0.007*
	CD	66	4.38	1.761		
Shooting prairie dogs should be used as a means to control them.	HSD	74	4.41	1.828	0.058	0.810
	CD	66	4.33	1.704		
If prairie dogs are not protected, they will become extinct in the future.	HSD	70	3.09	1.816	0.006	0.940
	CD	64	3.06	1.763		
Prairie dogs should be protected.	HSD	71	2.90	1.845	0.034	0.853
	CD	64	2.84	1.766		
The black-footed ferret should be protected.	HSD	71	4.35	1.559	0.691	0.407
	CD	64	4.14	1.379		
People who live near prairie dog towns are at risk for disease.	HSD	70	4.43	1.690	1.435	0.233
	CD	64	4.08	1.693		
Landowners should have the choice to remove or control prairie dogs from their property.	HSD	72	6.24	1.284	0.006	0.938
	CD	64	6.22	1.327		
I enjoy the presence of eagles and hawks.	HSD	72	5.04	1.657	0.614	0.435
	CD	64	5.25	1.414		
Removing prairie dogs will disturb the natural environment.	HSD	72	2.89	1.641	4.537	0.035
	CD	64	3.52	1.791		
Prairie dogs are part of the natural environment.	HSD	71	4.04	1.840	2.515	0.115
	CD	64	4.52	1.603		

(Continued).

Table 8 (Continued).

Statement	group	(n)	mean score	sd	F	P
Bison coexisted with prairie dogs for hundreds of years.	HSD	72	4.79	1.352	0.017	0.898
	CD	63	4.76	1.329		
Prairie dogs should not be protected.	HSD	72	5.19	1.904	0.000	0.983
	CD	64	5.19	1.798		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	HSD	72	3.71	1.272	0.085	0.771
	CD	64	3.64	1.429		

Table 9. Comparison of the knowledge among ranchers (R), farmers (F), and ranchers and farmers (R/F) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	R	47	32.6		
	F	151	37.7	2.062	0.357
	R/F	40	47.5		
When are prairie dogs most active?	R	48	59.6		
	F	155	58.7	0.028	0.986
	R/F	40	60.0		
To what disease are prairie dogs most susceptible?	R	47	17.4		
	F	154	20.8	1.742	0.783
	R/F	39	25.6		
On what do prairie dogs predominantly feed?	R	47	91.3		
	F	155	86.4	3.027	0.220
	R/F	40	95.0		

Chi-square analysis determined significance.
* =significance ($P \leq 0.01$), df=2

dogs belonged and to what disease black-tailed prairie dogs were most susceptible. No differences in knowledge level were detected for distance of the respondent's residence from a colony (Table 10), presence or absence of black-tailed prairie dogs on the respondent's property (Table 11), and age (Table 12) relative to the black-tailed prairie dog. Significantly more landowners who lived in counties with a high abundance of black-tailed prairie dog colonies knew that black-tailed prairie dogs were most susceptible to the plague compared to those who lived in counties with a low abundance of black-tailed prairie dog colonies (X^2=18.538, df=1, P=0.000) (Table 13). More landowners with a high school diploma knew when black-tailed prairie dogs were most active (X^2=13.375, df=1, P=0.000) (Table 14). More male landowners knew when black-tailed prairie dogs were most active compared to females (X^2=7.525, df=1, P=0.006) (Table 15).

Despite the respondent's sex, age, education level, presence or absence of black-tailed prairie dogs on their property, distance from their residence from a colony, or whether they lived in a county with a high or low abundance of black-tailed prairie dog colonies, the majority of landowners (≥84%) knew what black-tailed prairie dogs predominantly fed. With the exception of female landowners and those with a college degree, most (≥57%) knew when black-tailed prairie dogs were most active. With the exception of landowners who lived in counties with a high abundance of black-tailed prairie dog colonies, the majority (≥74%) did not know to what disease black-tailed prairie dogs were most susceptible. Finally, with the exception of landowners with a high school diploma and those who lived within two

Table 10. Comparison of the knowledge between landowners that lived in close proximity (≤2 miles) to a black-tailed prairie dog colony and those that lived further away (≥3 miles) from a colony relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	≤ 2 miles	42	52.3	3.948	0.047
	≥ 3 miles	80	33.7		
When are prairie dogs most active?	≤ 2 miles	44	63.6	0.016	0.900
	≥ 3 miles	80	62.5		
To what disease are prairie dogs most susceptible?	≤ 2 miles	43	16.3	0.025	0.874
	≥ 3 miles	79	15.2		
On what do prairie dogs predominantly feed?	≤ 2 miles	43	95.3	1.649	0.199
	≥ 3 miles	80	88.6		

Chi-square analysis determined significance.
*=significance (P≤0.01), df=1

Table 11. Comparison of the knowledge between landowners that had black-tailed prairie dogs on their property (Pd-on) and those that did not (Pd-off) have black-tailed prairie dogs on their property relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	Pd-on	55	41.8	0.258	0.611
	Pd-off	179	38.0		
When are prairie dogs most active?	Pd-on	56	57.1	0.103	0.748
	Pd-off	183	59.5		
To what disease are prairie dogs most susceptible?	Pd-on	56	26.8	1.326	0.249
	Pd-off	180	19.4		
On what do prairie dogs predominantly feed?	Pd-on	56	91.1	0.312	0.576
	Pd-off	182	88.5		

Chi-square analysis determined significance.
*=significance ($P \leq 0.01$), df=1

Table 12. Comparison of the knowledge between younger (≤ 48 years) and older (≥ 54 years) landowners relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	≤ 48	83	41.0	0.044	0.834
	≥ 54	119	39.5		
When are prairie dogs most active?	≤ 48	83	57.0	0.081	0.366
	≥ 54	124	63.0		
To what disease are prairie dogs most susceptible?	≤ 48	83	12.0	5.325	0.021
	≥ 54	121	24.8		
On what do prairie dogs predominantly feed?	≤ 48	83	84.3	2.775	0.096
	≥ 54	123	92.0		

Chi-square analysis determined significance.
*=significance (P≤0.01), df=1

Table 13. Comparison of the knowledge between landowners that lived in counties with a high abundance of black-tailed prairie dog colonies (≥30) and those that lived in low abundance counties (<30) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	High	29	44.8	0.596	0.440
	Low	201	37.3		
When are prairie dogs most active?	High	30	66.7	0.821	0.365
	Low	205	58.0		
To what disease are prairie dogs most susceptible?	High	30	53.3	18.538	0.000*
	Low	202	15.8		
On what do prairie dogs predominantly feed?	High	30	96.7	2.720	0.099
	Low	204	87.7		

Chi-square analysis determined significance.
*=significance (P≤0.01), df=1

Table 14. Comparison of the knowledge between landowners with a high school diploma (HSD) and those with a college degree (CD) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	HSD	71	29.6	6.408	0.011
	CD	65	51.0		
When are prairie dogs most active?	HSD	72	73.6	13.375	0.000*
	CD	65	43.0		
To what disease are prairie dogs most susceptible?	HSD	70	14.3	2.987	0.084
	CD	65	26.1		
On what do prairie dogs predominantly feed?	HSD	71	87.3	0.004	0.948
	CD	65	87.7		

Chi-square analysis determined significance.
*=significance ($P \leq 0.01$), df=1

Table 15. Comparison of the knowledge between male (M) and female (F) landowners relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	M	193	39.4	0.509	0.476
	F	39	33.3		
When are prairie dogs most active?	M	195	63.5	7.525	0.006*
	F	42	40.5		
To what disease are prairie dogs most susceptible?	M	193	22.2	1.278	0.258
	F	41	14.6		
On what do prairie dogs predominantly feed?	M	194	88.7	0.011	0.917
	F	42	88.1		

Chi-square analysis determined significance.
*=significance ($P \leq 0.01$), df=1

miles of a black-tailed prairie dog colony, most landowners (≥56%) did not know to what family black-tailed prairie dogs belonged.

When asked if black-tailed prairie dogs should be protected, general citizens expressed no opinion (X=4.08, sd=1.805), although they somewhat disagreed that black-tailed prairie dogs should be protected under the ESA (X=3.53, sd=1.945) (Table 16). General citizens agreed that black-tailed prairie dog burrows caused injury to livestock and horses but showed no opinion regarding black-tailed prairie dogs competing with cattle for forage or whether or not black-tailed prairie dogs could coexist with cattle. General citizens agreed that black-tailed prairie dogs were part of the natural environment and part of the American heritage but were not sure if removing them would disturb the natural environment. They disagreed that poisoning black-tailed prairie dogs was a good method to control black-tailed prairie dogs and were not sure if relocating or shooting black-tailed prairie dogs were good control measures. General citizens expressed no opinion relative to statements regarding the black-footed ferret.

There were no significant differences in opinion between general citizens who lived within two miles of black-tailed prairie dog colony and those who lived three or miles from a colony ($P>0.01$) (Table 17). No significant differences in opinion were found for general citizens who claimed to have black-tailed prairie dogs on their property compared to those who did not have black-tailed prairie dogs on their property ($P>0.01$) (Table 18). General citizens who lived in counties with a high abundance of black-tailed prairie dog colonies expressed no differences in opinion than those who lived in counties with a low abundance of black-tailed prairie dog

Table 16. Mean score of general citizens relative to statements regarding the black-tailed prairie dog.

Statement	(n)	mean score	sd
Prairie dogs are important to me.	386	3.76	1.838
Prairie dogs are part of the American heritage.	381	5.10	1.665
Prairie dogs are a nuisance.	385	4.52	1.875
Other species that rely on the prairie dog should be protected.	384	4.98	1.466
Prairie dogs should be protected under the Endangered Species Act.	386	3.53	1.945
I enjoy watching prairie dogs.	384	4.88	1.787
Prairie dogs and cattle can coexist.	385	4.21	1.756
Prairie dogs compete with livestock for forage.	387	4.26	1.665
Prairie dog burrows cause injury to livestock and horses.	389	5.25	1.561
Endangered species that rely on the prairie dog for their survival should be protected.	383	4.50	1.601
Poisoning is the best method of control.	386	3.42	1.871
The black-footed ferret relies on the prairie dog for its survival.	385	4.34	1.113
Prairie dog populations are low enough to warrant protection.	387	3.51	1.650
Relocating prairie dogs to another area is the best method for control.	387	4.02	1.864

(Continued).

Table 16 (continued).

Statement	(n)	mean score	sd
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	387	3.66	1.220
Shooting prairie dogs should be used as a means to control them.	389	3.89	1.930
If prairie dogs are not protected, they will become extinct in the future.	388	4.09	1.805
Prairie dogs should be protected.	385	4.08	1.838
The black-footed ferret should be protected.	385	4.67	1.501
People who live near prairie dog towns are at risk for disease.	388	3.86	1.500
Landowners should have the choice to remove or control prairie dogs from their property.	386	5.58	1.474
I enjoy the presence of eagles and hawks.	387	5.77	1.226
Removing prairie dogs will disturb the natural environment.	386	4.49	1.751
Prairie dogs are part of the natural environment.	385	5.27	1.382
Bison coexisted with prairie dogs for hundreds of years.	386	5.46	1.246
Prairie dogs should not be protected.	387	3.85	1.894
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	384	3.97	1.185

Table 17. Agreement between general citizens that lived in close proximity (≤ 2 miles) to a black-tailed prairie dog colony and those that lived further away (≥ 3 miles) from a colony relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01). * =significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	≤ 2 miles	86	3.97	1.824	1.009	0.316
	≥ 3 miles	124	3.70	1.900		
Prairie dogs are part of the American heritage.	≤ 2 miles	86	5.26	1.625	0.042	0.839
	≥ 3 miles	120	5.21	1.665		
Prairie dogs are a nuisance.	≤ 2 miles	85	4.49	1.937	1.267	0.262
	≥ 3 miles	123	4.78	1.706		
Other species that rely on the prairie dog should be protected.	≤ 2 miles	86	5.01	1.368	0.019	0.892
	≥ 3 miles	122	4.98	1.527		
Prairie dogs should be protected under the Endangered Species Act.	≤ 2 miles	86	3.57	2.050	2.021	0.157
	≥ 3 miles	124	3.19	1.836		
I enjoy watching prairie dogs.	≤ 2 miles	85	5.00	1.896	0.220	0.639
	≥ 3 miles	124	4.88	1.783		
Prairie dogs and cattle can coexist.	≤ 2 miles	86	4.36	1.721	1.177	0.279
	≥ 3 miles	123	4.09	1.815		
Prairie dogs compete with livestock for forage.	≤ 2 miles	86	4.21	1.709	0.215	0.643
	≥ 3 miles	124	4.32	1.760		
Prairie dog burrows cause injury to livestock and horses.	≤ 2 miles	86	5.31	1.544	0.832	0.363
	≥ 3 miles	124	5.50	1.388		
Endangered species that rely on the prairie dog for their survival should be protected.	≤ 2 miles	86	4.57	1.499	1.344	0.248
	≥ 3 miles	121	4.30	1.773		
Poisoning is the best method of control.	≤ 2 miles	86	3.47	1.889	0.036	0.850
	≥ 3 miles	123	3.41	1.899		

(Continued).

Table 17 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies the prairie dog for its survival.	≤ 2 miles	85	4.31	1.058	0.003	0.958
	≥ 3 miles	124	4.31	1.245		
Prairie dog populations are low enough to warrant protection.	≤ 2 miles	85	3.44	1.562	0.777	0.379
	≥ 3 miles	124	3.23	1.663		
Relocating prairie dogs to another area is the best method of control.	≤ 2 miles	86	4.08	1.880	0.033	0.856
	≥ 3 miles	123	4.03	1.929		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	≤ 2 miles	85	3.88	1.106	5.216	0.023
	≥ 3 miles	124	3.48	1.322		
Prairie dogs provide little benefit to the environment.	≤ 2 miles	86	4.09	1.591	1.203	0.274
	≥ 3 miles	124	4.35	1.687		
Shooting prairie dogs should be used as a means to control them.	≤ 2 miles	86	3.70	1.953	2.688	0.103
	≥ 3 miles	124	4.14	1.880		
If prairie dogs are not protected they will become extinct in the future.	≤ 2 miles	87	4.41	1.808	5.873	0.016
	≥ 3 miles	124	3.80	1.821		
Prairie dogs should be protected.	≤ 2 miles	86	4.21	1.809	2.818	0.095
	≥ 3 miles	123	3.77	1.881		
The black-footed ferret should be protected.	≤ 2 miles	86	4.72	1.452	0.984	0.322
	≥ 3 miles	123	4.51	1.528		
People who live near prairie dog towns are at risk for disease.	≤ 2 miles	87	3.76	1.478	0.094	0.753
	≥ 3 miles	124	3.82	1.498		
Landowners should have the choice to remove or control prairie dogs from their property.	≤ 2 miles	87	5.56	1.661	2.497	0.116
	≥ 3 miles	123	5.87	1.152		

(Continued).

Table 17 (Continued).

Statement	group	(n)	mean score	sd	F	P
I enjoy the presence of eagles and hawks.	≤ 2 miles	87	5.64	1.347	1.704	0.193
	≥ 3 miles	124	5.87	1.168		
Removing prairie dogs will disturb the natural environment.	≤ 2 miles	87	4.57	1.604	0.526	0.469
	≥ 3 miles	123	4.40	1.823		
Prairie dogs are part of the natural environment.	≤ 2 miles	87	5.25	1.504	0.028	0.867
	≥ 3 miles	122	5.29	1.405		
Bison coexisted with prairie dogs for hundreds of years.	≤ 2 miles	86	5.49	1.205	0.485	0.487
	≥ 3 miles	124	5.60	1.181		
Prairie dogs should not be protected.	≤ 2 miles	87	3.78	1.839	1.751	0.187
	≥ 3 miles	124	4.13	1.904		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	≤ 2 miles	87	4.17	1.241	5.184	0.024
	≥ 3 miles	124	3.79	1.171		

Table 18. Agreement between general citizens that had black-tailed prairie dogs on their property (Pd-on) and those that did not (Pd-off) have black-tailed prairie dogs on their property relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance ($P \leq 0.01$). * =significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	Pd-on	15	3.80	2.274	0.004	0.949
	Pd-off	359	3.77	1.825		
Prairie dogs are part of the American heritage.	Pd-on	14	5.71	1.267	1.792	0.182
	Pd-off	355	5.11	1.670		
Prairie dogs are a nuisance.	Pd-on	14	4.57	2.243	0.017	0.897
	Pd-off	358	4.51	1.859		
Other species that rely on the prairie dog should be protected.	Pd-on	15	5.20	1.424	0.344	0.558
	Pd-0ff	3.58	4.97	1.476		
Prairie dogs should be protected under the Endangered Species Act.	Pd-on	15	3.13	2.356	0.784	0.376
	Pd-off	359	3.59	1.930		
I enjoy watching prairie dogs.	Pd-on	15	4.53	2.031	0.639	0.425
	Pd-off	357	4.91	1.779		
Prairie dogs and cattle can coexist.	Pd-on	15	4.13	1.922	0.047	0.828
	Pd-off	358	4.23	1.759		
Prairie dogs compete with livestock for forage.	Pd-on	15	4.47	1.807	0.272	0.602
	Pd-off	360	4.24	1.673		
Prairie dog burrows cause injury to livestock and horses.	Pd-on	15	5.67	1.633	1.125	0.290
	Pd-off	361	5.23	1.560		
Endangered species that rely on the prairie dog for their survival should be protected.	Pd-on	15	4.27	1.335	0.321	0.572
	Pd-off	356	4.51	1.630		
Poisoning is the best method of control.	Pd-on	15	3.33	2.059	0.015	0.902
	Pd-off	358	3.39	1.863		
The black-footed ferret relies on the prairie dog for its survival.	Pd-on	15	4.67	1.047	1.312	0.253
	Pd-off	358	4.33	1.129		

(Continued).

Table 18 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dog populations are low enough to warrant protection.	Pd-on	15	3.67	1.952	0.091	0.763
	Pd-off	359	3.53	1.645		
Relocating prairie dogs to another area is the best method for control.	Pd-on	15	4.13	1.995	0.026	0.871
	Pd-off	359	4.05	1.870		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	Pd-on	15	3.47	1.187	0.422	0.516
	Pd-off	359	3.68	1.229		
Prairie dogs provide little benefit to the environment.	Pd-on	15	4.07	1.981	0.012	0.913
	Pd-off	360	4.11	1.625		
Shooting prairie dogs should be used as a means to control them.	Pd-on	15	3.93	2.374	0.016	0.901
	Pd-off	361	3.87	1.915		
If prairie dogs are not protected, they will become extinct in the future.	Pd-on	15	3.93	1.981	0.160	0.689
	Pd-off	361	4.12	1.807		
Prairie dogs should be protected.	Pd-on	15	4.27	1.981	0.120	0.729
	Pd-off	358	4.10	1.842		
The black-footed ferret should be protected.	Pd-on	15	4.87	1.598	0.206	0.650
	Pd-off	358	4.69	1.496		
People who live near prairie dog towns are at risk for disease.	Pd-on	15	4.67	1.718	4.652	0.032
	Pd-off	361	3.81	1.496		
Landowners should have the choice to remove or control prairie dogs from their property.	Pd-on	15	5.87	1.457	0.621	0.431
	Pd-off	359	5.56	1.478		
I enjoy the presence of eagles and hawks.	Pd-on	15	6.13	1.246	1.430	0.233
	Pd-off	360	5.74	1.234		
Removing prairie dogs will disturb the natural environment.	Pd-on	15	4.13	2.031	0.632	0.427
	Pd-off	359	4.50	1.759		
Prairie dogs are part of the natural environment.	Pd-on	15	5.53	1.125	0.494	0.483
	Pd-off	358	5.28	1.396		

(Continued).

Table 18 (Continued).

Statement	group	(n)	mean score	sd	F	P
Bison coexisted with prairie dogs for hundreds of years.	Pd-on	15	5.80	1.146	1.095	0.296
	Pd-off	359	5.45	1.258		
Prairie dogs should not be protected.	Pd-on	15	3.93	2.219	0.063	0.803
	Pd-off	360	3.81	1.884		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	Pd-on	15	3.80	1.207	0.351	0.554
	Pd-off	358	3.99	1.192		

colonies for 27 of the 28 statements (P>0.01) (Table 19). General citizens who lived in counties with a high abundance of black-tailed prairie dog colonies more strongly agreed that black-tailed prairie dogs compete with cattle for forage than did those who lived in counties with a low abundance of black-tailed prairie dog colonies (F=6.646, df=151,165, P=0.010).

No differences were found for 25 of the 28 statements between younger (≤ 48 years) and older (≥54 years) general citizens (P>0.01) (Table 20). Younger general citizens agreed more strongly that species (F=8.666, df=151,165, P=0.003) and endangered species (F=9.131, df=150,163, P=0.003) that rely on the black-tailed prairie dog should be protected. Younger general citizens also disagreed more strongly that black-tailed prairie dogs provide little benefit to the environment than did older general citizens (F=7.149, df=152,166, P=0.008). Male and female general citizens responded significantly different from one another for 14 of the 28 statements (P≤0.01) (Table 21). For example, females enjoyed watching black-tailed prairie dogs more than males (F=20.797, df=264,117, P=0.000). Females disagreed more strongly than males that shooting (F=60.057, df=266,120, P=0.000) and poisoning (F=11.184. df=265,118, P=0.001) black-tailed prairie dogs were good methods of control. Females also disagreed more strongly than males that landowners should have the choice to control or remove black-tailed prairie dogs from their property (F=6.991, df=264,119, P=0.009).

No significant differences were found for 24 of the 28 statements between general citizens with a high school diploma and those with a college degree (P>0.01) (Table 22). General citizens with a college degree agreed more strongly that

Table 19. Agreement between general citizens that lived in counties with a high abundance of black-tailed prairie dog colonies (≥30) and those that lived in counties with a low abundance of black-tailed prairie dog colonies (<30) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01). * =significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	High	20	3.30	2.130	1.412	0.235
	Low	360	3.80	1.814		
Prairie dogs are part of the American heritage.	High	21	4.48	1.834	3.237	0.073
	Low	354	5.15	1.649		
Prairie dogs are a nuisance.	High	21	5.33	1.880	4.404	0.037
	Low	358	4.45	1.869		
Other species that rely on the prairie dogs should be protected.	High	20	4.70	1.867	0.760	0.384
	Low	358	4.99	1.446		
Prairie dogs should be protected under the Endangered Species Act.	High	21	2.71	1.901	4.039	0.045
	Low	359	3.58	1.931		
I enjoy watching prairie dogs.	High	21	4.33	2.058	2.116	0.147
	Low	357	4.91	1.758		
Prairie dogs and cattle can coexist.	High	21	4.14	2.081	0.042	0.837
	Low	358	4.22	1.726		
Prairie dogs compete with livestock for forage.	High	21	5.14	1.558	6.646	0.010*
	Low	360	4.19	1.653		
Prairie dog burrows cause injury to livestock and horses.	High	21	5.71	1.488	2.039	0.154
	Low	362	5.21	1.569		
Endangered species that rely on the prairie dog for their survival should be protected.	High	21	4.48	1.887	0.004	0.947
	Low	356	4.50	1.591		
Poisoning is the best method of control.	High	21	3.95	1.987	1.920	0.167
	Low	359	3.38	1.845		

(Continued).

Table 19 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies on the prairie dog for its survival.	High	21	3.95	1.359	2.651	0.104
	Low	358	4.36	1.101		
Prairie dog populations are low enough to warrant protection.	High	21	2.90	1.921	3.108	0.079
	Low	360	3.56	1.627		
Relocating prairie dogs to another area is the best method for control.	High	21	3.48	1.990	2.050	0.153
	Low	360	4.07	1.847		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	High	21	3.43	1.434	0.827	0.364
	Low	360	3.68	1.193		
Prairie dogs provide little benefit to the environment.	High	21	4.43	1.912	0.814	0.367
	Low	361	4.10	1.612		
Shooting prairie dogs should be used as a means to control them.	High	21	4.52	1.601	2.442	0.119
	Low	362	3.85	1.943		
If prairie dogs are not protected, they will become extinct in the future.	High	21	3.33	2.082	3.907	0.049
	Low	361	4.13	1.779		
Prairie dogs should be protected.	High	21	3.19	1.965	5.444	0.020
	Low	358	4.14	1.809		
The black-footed ferret should be protected.	High	21	4.48	1.940	0.386	0.535
	Low	358	4.68	1.464		
People who live near prairie dog towns are at risk for disease.	High	21	4.57	1.720	5.352	0.021
	Low	361	3.80	1.476		
Landowners should have the choice to remove or control prairie dogs from their property.	High	21	6.33	0.856	5.873	0.016
	Low	359	5.55	1.473		
I enjoy the presence of eagles and hawks.	High	21	5.76	0.831	0.001	0.978
	Low	360	5.77	1.244		
Removing prairie dogs will disturb the natural environment.	High	21	4.38	2.133	0.073	0.788
	Low	359	4.49	1.737		

(Continued).

Table 19 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are part of the natural environment.	High	21	5.24	1.640	0.011	0.916
	Low	358	5.27	1.371		
Bison coexisted with prairie dogs for hundreds of years.	High	21	5.43	1.287	0.012	0.912
	Low	359	5.46	1.248		
Prairie dogs should not be protected	High	21	4.52	2.112	2.917	0.088
	Low	360	3.80	1.867		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	High	21	3.38	1.465	5.543	0.019
	Low	357	4.01	1.164		

Table 20. Agreement between younger (≤ 48 years) and older (≥ 54 years) general citizens relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01).* =significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	≤ 48	153	3.66	1.857	0.004	0.951
	≥ 54	165	3.67	1.795		
Prairie dogs are part of the American heritage.	≤ 48	151	5.00	1.697	0.067	0.796
	≥ 54	162	5.05	1.675		
Prairie dogs are a nuisance.	≤ 48	152	4.39	1.919	1.614	0.205
	≥ 54	166	4.66	1.848		
Other species that rely on the prairie dog should be protected.	≤ 48	153	5.17	1.361	8.666	0.003*
	≥ 54	163	4.69	1.542		
Prairie dogs should be protected under the Endangered Species Act.	≤ 48	153	3.48	1.920	0.045	0.832
	≥ 54	166	3.53	1.981		
I enjoy watching prairie dogs.	≤ 48	152	4.86	1.831	0.154	0.695
	≥ 54	165	4.78	1.801		
Prairie dogs and cattle can coexist.	≤ 48	151	4.13	1.745	0.114	0.736
	≥ 54	166	4.19	1.775		
Prairie dogs compete with livestock for forage.	≤ 48	153	4.31	1.615	0.201	0.654
	≥ 54	166	4.22	1.735		
Prairie dog burrows cause injury to livestock and horses.	≤ 48	153	5.39	1.434	0.553	0.458
	≥ 54	168	5.27	1.549		
Endangered species that rely on the prairie dog for their survival should be protected.	≤ 48	151	4.74	1.543	9.131	0.003*
	≥ 54	164	4.20	1.625		
Poisoning is the best method of control.	≤ 48	152	3.28	1.747	3.143	0.077
	≥ 54	166	3.66	1.990		

(Continued).

Table 20 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies on the prairie dog for its survival.	≤ 48	152	4.35	1.158	0.309	0.579
	≥ 54	165	4.28	1.080		
Prairie dog populations are low enough to warrant protection.	≤ 48	152	3.48	1.496	0.347	0.556
	≥ 54	167	3.59	1.715		
Relocating prairie dogs to another area is the best method for control.	≤ 48	152	4.01	1.800	0.004	0.953
	≥ 54	167	3.99	1.953		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	≤ 48	152	3.84	1.157	6.362	0.012
	≥ 54	167	3.50	1.236		
Prairie dogs provide little benefit to the environment.	≤ 48	153	3.90	1.555	7.149	0.008*
	≥ 54	167	4.39	1.693		
Shooting prairie dogs should be used as a means to control them.	≤ 48	153	4.07	1.989	2.101	0.148
	≥ 54	168	3.75	1.907		
If prairie dogs are not protected, they will become extinct in the future.	≤ 48	154	4.14	1.754	0.216	0.642
	≥ 54	166	4.05	1.877		
Prairie dogs should be protected.	≤ 48	154	4.10	1.790	0.348	0.556
	≥ 54	163	3.98	1.894		
The black-footed ferret should be protected.	≤ 48	154	4.74	1.454	0.894	0.345
	≥ 54	164	4.58	1.574		
People who live near prairie dog towns are at risk for disease.	≤ 48	154	3.82	1.517	0.033	0.857
	≥ 54	166	3.86	1.527		
Landowners should have the choice to remove or control prairie dogs from their property.	≤ 48	154	5.60	1.393	0.178	0.674
	≥ 54	165	5.53	1.583		
I enjoy the presence of eagles and hawks.	≤ 48	154	5.77	1.366	0.019	0.890
	≥ 54	166	5.75	1.110		

(Continued).

Table 20 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	≤ 48	154	4.72	1.702	6.555	0.011
	≥ 54	165	4.22	1.758		
Prairie dogs are part of the natural environment.	≤ 48	153	5.37	1.366	2.822	0.094
	≥ 54	165	5.10	1.421		
Bison coexisted with prairie dogs for hundreds of years.	≤ 48	154	5.49	1.195	0.983	0.322
	≥ 54	166	5.36	1.289		
Prairie dogs should not be protected.	≤ 48	154	3.79	1.857	0.891	0.346
	≥ 54	166	3.99	1.959		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	≤ 48	154	4.06	1.130	4.007	0.046
	≥ 54	164	3.79	1.285		

Table 21. Agreement between male (M) and female (F) general citizens relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree,4 = no opinion, 5 = somewhat agree, 6 = agree, 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01). *=significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	M	266	3.60	1.847	7.121	0.008*
	F	119	4.13	1.770		
Prairie dogs are part of the American heritage.	M	261	5.01	1.741	2.875	0.091
	F	119	5.32	1.473		
Prairie dogs are a nuisance.	M	267	4.67	1.853	5.840	0.016*
	F	117	4.17	1.890		
Other species that rely on the prairie dog should be protected.	M	264	5.06	1.476	2.305	0.130
	F	119	4.82	1.438		
Prairie dogs should be protected under the Endangered Species Act.	M	266	3.22	1.959	23.356	0.000*
	F	119	4.23	1.734		
I enjoy watching prairie dogs.	M	265	4.61	1.846	20.797	0.000*
	F	118	5.49	1.489		
Prairie dogs and cattle can coexist.	M	265	4.08	1.808	5.039	0.025
	F	119	4.51	1.610		
Prairie dogs compete with livestock for forage.	M	266	4.43	1.706	9.029	0.003*
	F	120	3.88	1.518		
Prairie dog burrows cause injury to livestock and horses.	M	267	5.41	1.495	8.962	0.003*
	F	121	4.90	1.655		
Endangered species that rely on the prairie dog for their survival should be protected.	M	263	4.38	1.697	4.873	0.028
	F	119	4.77	1.343		
Poisoning is the best method of control.	M	266	3.63	1.899	11.184	0.001*
	F	119	2.95	1.731		

(Continued).

Table 21 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies on the prairie dog for its survival.	M	265	4.40	1.231	2.943	0.087
	F	119	4.19	0.784		
Prairie dog populations are low enough to warrant protection.	M	267	3.34	1.666	9.915	0.002*
	F	119	3.91	1.557		
Relocating prairie dogs to another area is the best method for control.	M	266	3.85	1.913	7.538	0.006*
	F	120	4.41	1.703		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	M	267	3.54	1.295	8.169	0.004*
	F	119	3.92	0.993		
Prairie dogs provide little benefit to the environment.	M	267	4.32	1.734	11.759	0.001*
	F	120	3.71	1.325		
Shooting prairie dogs should be used as a means to control them.	M	267	4.36	1.808	60.057	0.000*
	F	121	2.83	1.781		
If prairie dogs are not protected, they will become extinct in the future.	M	267	3.96	1.839	5.072	0.025
	F	120	4.40	1.702		
Prairie dogs should be protected.	M	265	3.73	1.859	33.564	0.000*
	F	119	4.86	1.536		
The black-footed ferret should be protected.	M	266	4.62	1.562	0.975	0.324
	F	118	4.79	1.358		
People who live near prairie dog towns are at risk for disease.	M	267	3.90	1.539	0.817	0.367
	F	120	3.75	1.404		
Landowners should have the choice to remove or control prairie dogs from their property.	M	265	5.72	1.454	6.991	0.009*
	F	120	5.29	1.480		
I enjoy the presence of eagles and hawks.	M	266	5.81	1.214	0.798	0.372
	F	120	5.69	1.249		

(Continued).

Table 21 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	M	266	4.36	1.820	4.983	0.026
	F	119	4.79	1.556		
Prairie dogs are part of the natural environment.	M	264	5.17	1.482	4.495	0.035
	F	120	5.49	1.108		
Bison coexisted with prairie dogs for hundreds of years.	M	266	5.53	1.235	2.096	0.149
	F	119	5.33	1.263		
Prairie dogs should not be protected.	M	266	4.19	1.922	29.430	0.000*
	F	120	3.10	1.606		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	M	264	3.92	1.287	1.405	0.237
	F	119	4.08	0.922		

Table 22. Agreement between general citizens with a high school diploma (HSD) and those with a college degree (CD) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01).
* =significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	HSD	94	3.61	1.908	1.820	0.179
	CD	107	3.96	1.832		
Prairie dogs are part of the American heritage.	HSD	94	4.74	1.872	3.506	0.063
	CD	107	5.21	1.618		
Prairie dogs are a nuisance.	HSD	96	4.49	2.026	0.885	0.348
	CD	105	4.23	1.908		
Other species that rely on the prairie dog should be protected.	HSD	95	4.57	1.730	15.233	0.000*
	CD	107	5.38	1.218		
Prairie dogs should be protected under the Endangered Species Act.	HSD	95	3.41	2.071	0.647	0.422
	CD	107	3.64	1.905		
I enjoy watching prairie dogs.	HSD	93	4.55	2.098	1.433	0.233
	CD	107	4.87	1.688		
Prairie dogs and cattle can coexist.	HSD	95	4.08	1.928	0.983	0.323
	CD	107	4.34	1.688		
Prairie dogs compete with livestock for forage.	HSD	95	4.29	1.833	0.079	0.778
	CD	107	4.22	1.717		
Prairie dog burrows cause injury to livestock and horses.	HSD	97	5.44	1.626	2.039	0.155
	CD	107	5.11	1.679		
Endangered species that rely on the prairie dog for their survival should be protected.	HSD	94	4.14	1.763	8.849	0.003
	CD	105	4.83	1.509		
Poisoning is the best method of control.	HSD	95	3.55	1.988	1.751	0.187
	CD	106	3.20	1.753		

(Continued).

Table 22 (Continued).

Statement	group	(n)	mean score	sd	F	P
The black-footed ferret relies on the prairie dog for its survival.	HSD	94	4.18	1.200	2.509	0.115
	CD	107	4.43	1.029		
Prairie dog populations are low enough to warrant protection.	HSD	96	3.31	1.773	2.916	0.089
	CD	107	3.72	1.624		
Relocating prairie dogs to another area is the best method for control.	HSD	96	4.15	1.947	0.653	0.420
	CD	106	3.93	1.780		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	HSD	96	3.61	1.301	0.238	0.626
	CD	107	3.70	1.223		
Prairie dogs provide little benefit to the environment.	HSD	96	4.11	1.752	1.892	0.171
	CD	107	3.79	1.660		
Shooting prairie dogs should be used as a method of control.	HSD	97	3.98	1.979	0.031	0.859
	CD	107	4.03	1.935		
If prairie dogs are not protected, they will become extinct in the future.	HSD	95	4.08	1.796	0.206	0.651
	CD	107	3.97	1.718		
Prairie dogs should be protected.	HSD	93	3.95	1.885	0.290	0.591
	CD	106	4.08	1.746		
The black-footed ferret should be protected.	HSD	93	4.55	1.605	0.726	0.395
	CD	106	4.73	1.342		
People who live near prairie dog towns are at risk for disease.	HSD	95	4.09	1.618	4.640	0.032
	CD	107	3.62	1.534		
Landowners should have the choice to remove or control prairie dogs from their property.	HSD	95	5.88	1.270	5.813	0.017
	CD	106	5.42	1.466		
I enjoy the presence of eagles and hawks.	HSD	95	5.64	1.360	1.579	0.210
	CD	106	5.87	1.188		

(Continued).

Table 22 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	HSD	95	3.98	1.851	10.704	0.001*
	CD	106	4.80	1.715		
Prairie dogs are part of the natural environment.	HSD	94	4.97	1.492	9.457	0.002*
	CD	106	5.58	1.304		
Bison coexisted with prairie dogs for hundreds of years.	HSD	94	5.28	1.339	6.656	0.011
	CD	106	5.73	1.126		
Prairie dogs should not be protected.	HSD	95	3.88	1.962	0.000	0.992
	CD	106	3.89	1.817		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	HSD	95	3.91	1.361	1.010	0.316
	CD	105	4.07	0.880		

species that rely on the black-tailed prairie dog should be protected (F=15.233, df=94,106, P=0.000) as well as endangered species (F=8.849, df=93,104 P=0.003). They also tended to agree more strongly that black-tailed prairie dogs were part of the natural environment (F=10.704, df=93,105, P=0.002) and removing them would disturb the natural environment (F=9.457, df=93,105, P=0.001).

No significant differences were found between general citizens who lived in close proximity or further away from a black-tailed prairie dog colony (P>0.01) (Table 23), between those who had black-tailed prairie dogs on their property and those who did not have black-tailed prairie dogs on their property (P>0.01) (Table 24), and between those with a high school diploma and college degree (P>0.01) (Table 25). Significantly more general citizens who lived in counties with a high abundance of black-tailed prairie dog colonies knew to what diseases black-tailed prairie dogs were most susceptible (X^2=13.336, df=1, P=0.000) (Table 26).

Older citizens were more likely to know when black-tailed prairie dogs were most active than younger citizens (X^2=8.154, df=1, P=0.004) (Table 27). Males knew significantly more about the black-tailed prairie dog than females (P≤0.01) for three of the four questions (Table 28).

Despite the respondent's sex, age, education level, presence or absence of black-tailed prairie dogs on their property, distance of their residence from a colony, or whether they lived in a county with a high or low abundance of black-tailed prairie dog colonies, the majority of general citizens (≥53%) knew on what black-tailed prairie dogs predominantly feed. With the exception of females and younger general citizens, the majority (≥52%) knew when black-tailed prairie dogs were most active.

Table 23. Comparison of the knowledge between general citizens that lived in close proximity (≤ 2 miles) of a black-tailed prairie dog colony and those that lived further away (≥ 3 miles) from a colony relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	≤ 2 miles	87	36.8	0.162	0.687
	≥ 3 miles	124	39.5		
When are prairie dogs most active?	≤ 2 miles	87	64.4	0.000	0.982
	≥ 3 miles	124	64.5		
To what disease are prairie dogs most susceptible?	≤ 2 miles	86	16.3	0.077	0.782
	≥ 3 miles	124	17.7		
On what do prairie dogs predominantly feed?	≤ 2 miles	87	65.5	0.065	0.782
	≥ 3 miles	122	67.2		

Chi-square analysis determined significance.
* =significance (P≤0.01), df=1

Table 24. Comparison of the knowledge between general citizens that had black-tailed prairie dogs on (Pd-on) their property and those that did not have black-tailed prairie dogs on their property (Pd-off) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	Pd-On	14	42.9	0.409	0.522
	Pd-off	363	34.4		
When are prairie dogs most active?	Pd-on	15	53.3	0.080	0.778
	Pd-off	363	57.0		
To what disease are prairie dogs most susceptible?	Pd-on	15	20.0	0.269	0.604
	Pd-off	362	14.9		
On what do prairie dogs predominantly feed?	Pd-on	15	53.3	0.841	0.359
	Pd-off	361	65.1		

Chi-square analysis determined significance.
* =significance ($P \leq 0.01$), df=1

Table 25. Knowledge of the black-tailed prairie dog between general citizens with a high school diploma (HSD) and a college degree (CD) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	HSD	95	26.3	5.957	0.015*
	CD	108	42.6		
When are prairie dogs most active?	HSD	96	56.3	0.247	0.619
	CD	108	52.8		
To what disease are prairie dogs most susceptible?	HSD	96	12.5	1.408	0.235
	CD	108	18.5		
On what do prairie dogs predominantly feed?	HSD	96	55.2	5.481	0.019*
	CD	107	71.0		

Chi-square analysis determined significance.
* =significance ($P \leq 0.01$), df=1

Table 26. Comparison of the knowledge between general citizens that lived in counties with a high abundance of black-tailed prairie dog colonies (≥30) and those that lived in counties with a low abundance of black-tailed prairie dog colonies (<30) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	High	21	47.6	1.498	0.221
	Low	362	34.3		
When are prairie dogs most active?	High	21	52.3	0.153	0.693
	Low	363	56.7		
To what disease are prairie dogs most susceptible?	High	21	47.6	13.336	0.000*
	Low	362	13.2		
On what do prairie dogs predominantly feed?	High	21	81.0	2.755	0.097
	Low	361	64.0		

Chi-square analysis determined significance.
* =significance (P≤0.01), df=1

Table 27. Comparison of the knowledge between younger (≤ 48 years) and older (≥ 54 years) general citizens relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	≤ 48	154	34.4	0.156	0.693
	≥ 54	167	32.3		
When are prairie dogs most active?	≤ 48	154	45.5	8.154	0.004*
	≥ 54	168	61.3		
To what disease are prairie dogs most susceptible?	≤ 48	154	16.8	2.017	0.156
	≥ 54	167	11.4		
On what do prairie dogs predominantly feed?	≤ 48	154	61.7	0.012	0.914
	≥ 54	167	62.3		

Chi-square analysis determined significance.
* =significance (P≤0.01), df=1

Table 28. Comparison of the knowledge between male (M) and female (F) general citizens relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	M	267	36.3	0.898	0.343
	F	121	31.4		
When are prairie dogs most active?	M	268	61.9	10.126	0.001*
	F	121	44.6		
To what disease are prairie dogs most susceptible?	M	267	19.9	19.571	0.000*
	F	121	4.1		
On what do prairie dogs predominantly feed?	M	266	69.5	8.956	0.003*
	F	121	53.7		

Chi-square analysis determined significance.
* =significance ($P \leq 0.01$), df=1

The majority of general citizens (≥54%) did not know to what family black-tailed prairie dogs belonged as well as to what disease black-tailed prairie dogs are most susceptible.

Significant differences were found for 27 of the 28 statements ($P \leq 0.01$) regarding the black-tailed prairie dog between landowners and general citizens (Table 29). Landowners expressed more negative opinions about the black-tailed prairie dog than did general citizens. General citizens expressed no opinion for a majority of the statements whereas the majority of landowners strongly agreed or disagreed with the statements. General citizens did agree with landowners that black-tailed prairie dog burrows caused injury to livestock and horses and that landowners should have the right to control or remove black-tailed prairie dogs from their property. Both groups disagreed that the black-tailed prairie dog should be protected under the ESA.

No interactions were found for 24 of the 28 statements between landowners and general citizens that lived within two miles or three or more miles of a black-tailed prairie dog colony (Table 30). Landowner and general citizen opinion was dependent on how close they resided to a colony for four of the 28 statements. No interactions were found for the 28 statements between landowners and general citizens that had black-tailed prairie dogs on their property and those that did not have black-tailed prairie dogs on their property ($P > 0.01$) (Table 31) or between landowners and general citizens who lived in counties with a high abundance of black-tailed prairie dog colonies and those who lived in low abundance counties ($P > 0.01$) (Table 32).

Table 29. Agreement between landowners (LO) and general citizens (GC) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). One-way ANOVA was used to determine significance (P≤0.01). * =Significance

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO	246	2.50	1.815	71.179	0.000*
	GC	386	3.76	1.838		
Prairie dogs are part of the American heritage.	LO	245	4.17	1.781	44.521	0.000*
	GC	381	5.10	1.665		
Prairie dogs are a nuisance.	LO	245	5.58	1.873	47.672	0.000*
	GC	385	4.52	1.875		
Other species that rely on the prairie dog should be protected.	LO	243	4.19	1.669	38.622	0.000*
	GC	384	4.98	1.466		
Prairie dogs should be protected under the Endangered Species Act.	LO	246	2.26	1.709	70.409	0.000*
	GC	386	3.53	1.945		
I enjoy watching prairie dogs.	LO	246	3.62	1.944	69.523	0.000*
	GC	384	4.88	1.787		
Prairie dogs and cattle can coexist.	LO	247	2.97	1.893	71.153	0.000*
	GC	385	4.21	1.756		
Prairie dogs compete with livestock for forage.	LO	247	5.49	1.662	82.581	0.000*
	GC	387	4.26	1.665		
Prairie dog burrows cause injury to livestock and horses.	LO	246	6.09	1.270	50.412	0.000*
	GC	389	5.25	1.561		
Endangered species that rely on the prairie dog for their survival should be protected.	LO	243	3.74	1.609	33.636	0.000*
	GC	383	4.50	1.601		
Poisoning is the best method of control.	LO	247	5.07	1.768	122.321	0.000*
	GC	386	3.42	1.871		
The black-footed ferret relies on the prairie dog for its survival.	LO	245	4.21	1.269	1.702	0.193
	GC	385	4.34	1.113		

(Continued).

Table 29 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dog populations are low enough to warrant protection.	LO	247	2.54	1.686	51.840	0.000*
	GC	387	3.51	1.650		
Relocating prairie dogs to another area is the best method for control.	LO	245	3.03	1.902	42.055	0.000*
	GC	387	4.02	1.864		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO	242	2.86	1.636	49.223	0.000*
	GC	387	3.66	1.220		
Prairie dogs provide little benefit to the environment.	LO	245	4.98	1.755	37.917	0.000*
	GC	388	4.13	1.639		
Shooting prairie dogs should be used as a means to control them.	LO	247	4.45	1.777	13.638	0.000*
	GC	389	3.89	1.930		
If prairie dogs are not protected, they will become extinct in the future.	LO	237	3.16	1.786	39.228	0.000*
	GC	388	4.09	1.805		
Prairie dogs should be protected.	LO	240	2.81	1.770	72.264	0.000*
	GC	385	4.08	1.838		
The black-footed ferret should be protected.	LO	238	4.11	1.584	20.173	0.000*
	GC	385	4.67	1.501		
People who live near prairie dog towns are at risk for disease.	LO	238	4.33	1.652	13.369	0.000*
	GC	388	3.86	1.500		
Landowners should have the choice to remove or control prairie dogs from their property.	LO	241	6.27	1.280	35.846	0.000*
	GC	386	5.58	1.474		
I enjoy the presence of eagles and hawks.	LO	240	5.23	1.483	24.858	0.000*
	GC	387	5.77	1.226		
Removing prairie dogs will disturb the natural environment.	LO	241	3.21	1.767	78.982	0.000*
	GC	386	4.49	1.751		
Prairie dogs are part of the natural environment.	LO	238	4.23	1.716	68.528	0.000*
	GC	385	5.27	1.382		

(Continued).

Table 29 (Continued).

Statement	group	(n)	mean score	sd	F	P
Bison coexisted with prairie dogs for hundreds of years.	LO	238	4.78	1.352	41.530	0.000*
	GC	386	5.46	1.246		
Prairie dogs should not be protected.	LO	240	5.23	1.781	81.853	0.000*
	GC	387	3.85	1.894		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO	240	3.60	1.414	12.581	0.000*
	GC	384	3.97	1.185		

Table 30. Agreement between landowners (LO) and general citizens (GC) that lived in close proximity (≤ 2 miles) of a black-tailed prairie dog colony and those that lived further away (≥ 3 miles) from a colony relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). Two-way ANOVA was used to determine an interaction (P≤0.01). [1]=≤ 2 miles*≥ 3 miles, [2]=LO*GC, [3]=≤ 2 miles/≥ 3 miles *LO/GC, * =significance for the interaction

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO ≤ 2 miles	43	2.53	2.016	0.023	0.879[1]
	GC ≤ 2 miles	86	3.97	1.824	26.364	0.879[2]
	LO ≥ 3 miles	82	2.87	1.831	1.814	0.179[3]
	GC ≥ 3 miles	124	3.70	1.900		
Prairie dogs are part of the American heritage.	LO ≤ 2 miles	43	3.95	1.988	0.977	0.324
	GC ≤ 2 miles	86	5.26	1.625	26.935	0.000[2]
	LO ≥ 3 miles	82	4.40	1.770	1.493	0.223[3]
	GC ≥ 3 miles	120	5.21	1.665		
Prairie dogs are a nuisance.	LO ≤ 2 miles	43	5.58	1.979	0.111	0.739[1]
	GC ≤ 2 miles	85	4.49	1.937	16.670	0.000[2]
	LO ≥ 3 miles	80	5.44	1.735	1.014	0.315[3]
	GC ≥ 3 miles	123	4.78	1.706		
Other species that rely on the prairie dog should be protected.	LO ≤ 2 miles	43	3.86	1.754	1.745	0.187[1]
	GC ≤ 2 miles	86	5.01	1.368	23.965	0.000[2]
	LO ≥ 3 miles	82	4.37	1.599	2.179	0.141[3]
	GC ≥ 3 miles	122	4.98	1.527		
Prairie dogs should be protected under the Endangered Species Act.	LO ≤ 2 miles	43	2.07	1.549	0.018	0.893[1]
	GC ≤ 2 miles	86	3.57	2.050	25.334	0.000[2]
	LO ≥ 3 miles	82	2.51	1.744	3.666	0.056[3]
	GC ≥ 3 miles	124	3.19	1.836		
I enjoy watching prairie dogs.	LO ≤ 2 miles	43	3.21	2.099	2.893	0.090[1]
	GC ≤ 2 miles	85	5.00	1.896	25.334	0.000[2]
	LO ≥ 3 miles	82	4.09	1.919	5.043	0.025[3]
	GC ≥ 3 miles	124	4.88	1.783		

(Continued).

Table 30 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs and cattle can coexist.	LO ≤ 2 miles	43	2.70	1.909	0.434	0.510
	GC ≤ 2 miles	86	4.36	1.721	32.768	0.000[2]
	LO ≥ 3 miles	82	3.26	2.017	3.618	0.058[3]
	GC ≥ 3 miles	123	4.09	1.818		
Prairie dogs compete with livestock for forage.	LO ≤ 2 miles	43	5.56	1.637	0.006	0.940[1]
	GC ≤ 2miles	86	4.21	1.709	37.028	0.000[2]
	LO ≥ 3 miles	82	5.41	1.663	0.410	0.523[3]
	GC ≥ 3 miles	124	4.32	1.760		
Prairie dog burrows cause injury to livestock and horses.	LO ≤ 2 miles	42	6.12	1.214	0.262	0.609[1]
	GC ≤ 2 miles	86	5.31	1.544	19.012	0.000[2]
	LO ≥ 3 miles	82	6.10	1.182	0.416	0.519[3]
	GC ≥ 3 miles	124	5.50	1.388		
Endangered species that rely on the prairie dog for their survival should be protected.	LO ≤ 2 miles	43	3.42	1.665	0.199	0.656[1]
	GC ≤ 2 miles	86	4.57	1.499	16.653	0.000[2]
	LO ≥ 3 miles	81	3.86	1.595	3.418	0.065[3]
	GC ≥ 3 miles	121	4.30	1.773		
Poisoning is the best method of control.	LO ≤ 2 miles	43	5.12	1.762	0.218	0.641[1]
	GC ≤ 2 miles	86	3.47	1.889	54.042	0.000[2]
	LO ≥ 3 miles	82	4.96	1.788	0.055	0.814[3]
	GC ≥ 3 miles	123	3.41	1.899		
The black-footed ferret relies on the prairie dog for its survival.	LO ≤ 2 miles	42	4.05	1.287	0.902	0.343[1]
	GC ≤ 2 miles	85	4.31	1.058	0.915	0.339[2]
	LO ≥ 3 miles	82	4.30	1.162	0.788	0.375[3]
	GC ≥ 3 miles	124	4.31	1.245		
Prairie dog populations are low enough to warrant protection.	LO ≤ 2 miles	43	2.33	1.569	0.574	0.449[1]
	GC ≤ 2 miles	85	3.44	1.562	15.901	0.000[2]
	LO ≥ 3 miles	82	2.82	1.671	3.276	0.071[3]
	GC ≥ 3 miles	124	3.23	1.663		
Relocating prairie dogs to another area is the best method for control.	LO ≤ 2 miles	43	3.02	1.858	0.126	0.722[1]
	GC ≤ 2 miles	86	4.08	1.880	17.158	0.000[2]
	LO ≥ 3 miles	82	3.23	1.939	0.329	0.567[3]
	GC ≥ 3 miles	123	4.03	1.929		

(Continued).

Table 30 (Continued).

Statement	group	(n)	mean score	sd	F	P
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO ≤ 2 miles	42	2.52	1.534	1.023	0.313[1]
	GC ≤ 2 miles	85	3.88	1.106	23.100	0.000[2]
	LO ≥ 3 miles	82	3.26	1.676	11.738	0.001[3]
	GC ≥ 3 miles	124	3.48	1.322		
Prairie dogs provide little benefit to the environment.	LO ≤ 2 miles	41	5.34	1.667	0.951	0.330[1]
	GC ≤ 2 miles	86	4.09	1.591	17.014	0.000[2]
	LO ≥ 3 miles	82	4.71	1.622	5.181	0.023[3]
	GC ≥ 3 miles	124	4.35	1.687		
Shooting prairie dogs should be used as a means to control them.	LO ≤ 2 miles	43	4.12	2.002	5.344	0.021[1]
	GC ≤ 2 miles	86	3.70	1.953	4.911	0.027[2]
	LO ≥ 3 miles	82	4.68	1.609	0.085	0.770[3]
	GC ≥ 3 miles	124	4.14	1.880		
If prairie dogs are not protected, they will become extinct in the future.	LO ≤ 2 miles	43	2.77	1.702	0.040	0.841[1]
	GC ≤ 2 miles	87	4.41	1.808	21.945	0.000[2]
	LO ≥ 3 miles	77	3.47	1.752	9.714	0.002[3]*
	GC ≥ 3 miles	124	3.80	1.821		
Prairie dogs should be protected.	LO ≤ 2 miles	43	2.47	1.764	0.379	0.538[1]
	GC ≤ 2 miles	86	4.21	1.809	30.440	0.000[2]
	LO ≥ 3 miles	79	3.16	1.705	7.106	0.008[3]*
	GC ≥ 3 miles	123	3.77	1.881		
The black-footed ferret should be protected.	LO ≤ 2 miles	42	4.26	1.609	1.076	0.300[1]
	GC ≤ 2 miles	86	4.72	1.452	5.743	0.017[2]
	LO ≥ 3 miles	79	4.09	1.666	0.009	0.923[3]
	GC ≥ 3 miles	123	4.51	1.528		
People who live near prairie dog towns are at risk for disease.	LO ≤ 2 miles	42	4.26	1.609	0.028	0.867[1]
	GC ≤ 2 miles	86	4.72	1.452	5.695	0.018[2]
	LO ≥ 3 miles	79	4.09	1.666	0.032	0.859[3]
	GC ≥ 3 miles	123	4.51	1.528		
Landowners should have the choice to remove or control prairie dogs from their property.	LO ≤ 2 miles	43	4.23	1.913	2.779	0.096[1]
	GC ≤ 2 miles	87	3.76	1.478	16.724	0.000[2]
	LO ≥ 3 miles	78	4.23	1.562	0.146	0.703[3]
	GC ≥ 3 miles	124	3.82	1.498		

(Continued).

Table 30 (Continued).

Statement	group	(n)	mean score	sd	F	P
I enjoy the presence of eagles and hawks.	LO ≤ 2 miles	43	6.23	1.172	2.832	0.093[1]
	GC ≤ 2 miles	87	5.56	1.661	15.276	0.000[2]
	LO ≥ 3 miles	80	6.42	0.978	0.069	0.793[3]
	GC ≥ 3 miles	123	5.87	1.168		
Removing prairie dogs will disturb the natural environment.	LO ≤ 2 miles	43	2.86	1.870	2.015	0.157[1]
	GC ≤ 2 miles	87	4.57	1.604	38.012	0.000[2]
	LO ≥ 3 miles	80	3.61	1.634	5.241	0.023[3]
	GC ≥ 3 miles	123	4.40	1.823		
Prairie dogs are part of the natural environment.	LO ≤ 2 miles	41	4.10	1.972	3.195	0.075[1]
	GC ≤ 2 miles	87	5.25	1.504	22.700	0.000[2]
	LO ≥ 3 miles	80	4.71	1.469	2.560	0.111[3]
	GC ≥ 3 miles	122	5.29	1.405		
Bison coexisted with prairie dogs for hundreds of years.	LO ≤ 2 miles	41	4.54	1.583	3.713	0.055[1]
	GC ≤ 2 miles	86	5.49	1.205	26.759	0.000[2]
	LO ≥ 3 miles	80	5.00	1.273	1.329	0.250[3]
	GC ≥ 3 miles	124	5.60	1.396		
Prairie dogs should not be protected.	LO ≤ 2 miles	42	5.57	1.699	0.244	0.622[1]
	GC ≤ 2 miles	87	3.78	1.839	38.965	0.000[2]
	LO ≥ 3 miles	80	5.01	1.688	4.479	0.035[3]
	GC ≥ 3 miles	124	4.13	1.904		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO ≤ 2 miles	43	3.05	1.542	1.714	0.191[1]
	GC ≤ 2 miles	87	4.17	1.241	14.165	0.000[2]
	LO ≥ 3 miles	80	3.81	1.192	15.327	0.000[3]*
	GC ≥ 3 miles	124	3.79	1.171		

Table 31. Agreement between landowners (LO) and general citizens (GC) that had prairie dogs on (Pd-on) their property and those that did not (Pd-off) have prairie dogs on their property relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). Two-way ANOVA was used to determine an interaction ($P \leq 0.01$). * =significance [1]=Pdon*pdoff, [2]=LO*GC, [3]=pdon/pdoff*LO/GC, * =significance for the interaction

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO (Pd-on)	56	2.11	1.670	0.817	0.367[1]
	GC (Pd-on)	15	3.80	2.274	25.631	0.000[2]
	LO (Pd-off)	187	2.64	1.848	1.032	0.310[3]
	GC (Pd-off)	359	3.77	1.825		
Prairie dogs are part of the American heritage.	LO (Pd-on)	56	3.80	0.813	0.058	0.810[1]
	GC (Pd-on)	14	5.71	1.267	26.404	0.000[2]
	LO (Pd-off)	186	4.28	1.776	4.102	0.043[3]
	GC (Pd-off)	355	5.11	1.670		
Prairie dogs are a nuisance.	LO (Pd-on)	57	6.02	1.695	1.081	0.299[1]
	GC (Pd-on)	14	4.57	2.243	17.479	0.000[2]
	LO (Pd-off)	185	4.48	1.874	0.660	0.417[3]
	GC (Pd-off)	358	4.51	1.859		
Other species that rely on the prairie dog should be protected.	LO (Pd-on)	54	4.20	1.805	0.250	0.617[1]
	GC (Pd-on)	15	5.20	1.424	13.885	0.000[2]
	LO (Pd-off)	186	4.19	1.646	0.209	0.648[3]
	GC (Pd-off)	358	4.97	1.476		
Prairie dogs should be protected under the Endangered Species Act.	LO (Pd-on)	57	1.77	1.488	3.686	0.055[1]
	GC (Pd-on)	15	3.13	2.356	20.557	0.000[2]
	LO (Pd-off)	186	2.40	1.750	0.093	0.761[3]
	GC (Pd-off)	359	3.59	1.930		
I enjoy watching prairie dogs.	LO (Pd-on)	56	3.13	1.908	3.337	0.068[1]
	GC (Pd-on)	15	4.53	2.031	20.449	0.000[2]
	LO (Pd-off)	187	3.78	1.941	0.236	0.627[3]
	GC (Pd-off)	357	4.91	1.779		
Prairie dogs and cattle can coexist.	LO (Pd-on)	57	2.79	1.878	0.374	0.541[1]
	GC (Pd-on)	15	4.13	1.922	21.246	0.000[2]
	LO (Pd-off)	187	3.03	1.913	0.060	0.806[3]
	GC (Pd-off)	358	4.23	1.759		

(Continued).

Table 31. (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs compete with livestock for forage.	LO (Pd-on)	57	5.67	1.640	0.812	0.368[1]
	GC (Pd-on)	15	4.47	1.807	22.280	0.000[2]
	LO (Pd-off)	187	5.44	1.679	0.000	0.996[3]
	GC (Pd-off)	360	4.24	1.673		
Prairie dog burrows cause injury to livestock and horses.	LO (Pd-on)	57	6.25	1.229	2.085	0.149[1]
	GC (Pd-on)	15	5.67	1.633	9.884	0.002[2]
	LO (Pd-off)	186	6.04	1.290	0.280	0.597[3]
	GC (Pd-off)	361	5.23	1.560		
Endangered species that rely on the prairie dog for their survival should be protected.	LO (Pd-on)	57	3.39	1.688	2.078	0.150[1]
	GC (Pd-on)	15	4.27	1.335	9.782	0.002[2]
	LO (Pd-off)	183	3.85	1.585	0.209	0.648[3]
	GC (Pd-off)	356	4.51	1.630		
Poisoning is the best method of control.	LO (Pd-on)	57	5.12	1.871	0.000	0.995[1]
	GC (Pd-on)	15	3.33	2.059	38.352	0.000[2]
	LO (Pd-off)	187	5.06	1.751	0.050	0.823[3]
	GC (Pd-off)	358	3.39	1.863		
The black-footed ferret relies on the prairie dog for its survival.	LO (Pd-on)	56	4.27	1.590	1.277	0.259[1]
	GC (Pd-on)	15	4.67	1.047	2.120	0.146[2]
	LO (Pd-off)	186	4.20	1.171	0.561	0.454[3]
	GC (Pd-0ff)	358	4.33	1.129		
Prairie dog populations are low enough to warrant protection.	LO (Pd-on)	57	2.05	1.684	0.941	0.333[1]
	GC (Pd-on)	15	3.67	1.952	24.065	0.000[2]
	LO (Pd-off)	187	2.67	1.658	2.227	0.136[3]
	GC (Pd-off)	359	3.53	1.645		
Relocating prairie dogs to another area is the best method for control.	LO (Pd-on)	57	2.65	1.847	0.489	0.485[1]
	GC (Pd-on)	15	4.13	1.995	17.693	0.000[2]
	LO (pd-off)	185	3.13	1.909	0.961	0.327[3]
	GC (pd-off)	359	4.05	1.870		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO (Pd-on)	57	2.37	1.622	4.039	0.045[1]
	GC (Pd-on)	15	3.47	1.187	17.286	0.000[2]
	LO (Pd-off)	182	3.01	1.625	1.038	0.309[3]
	GC (Pd-off)	359	3.68	1.229		

(Continued).

Table 31. (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs provide little benefit to the environment.	LO (Pd-on)	57	5.14	2.022	0.130	0.719[1]
	GC (Pd-on)	15	4.07	1.981	13.231	0.000[2]
	LO (Pd-off)	185	4.91	1.677	0.296	0.586[3]
	GC (Pd-off)	360	4.11	1.625		
Shooting prairie dogs should be used as a means to control them.	LO (Pd-on)	57	4.40	1.791	0.000	0.995[1]
	GC (Pd-on)	15	3.93	2.374	3.520	0.061[2]
	LO (Pd-off)	187	4.47	1.788	0.052	0.819[3]
	GC (Pd-off)	361	3.87	1.915		
If prairie dogs are not protected, they will become extinct in the future.	LO (Pd-on)	55	2.80	1.809	1.410	0.236[1]
	GC (Pd-on)	15	3.93	1.981	13.129	0.000[2]
	LO (Pd-off)	179	3.26	1.781	0.243	0.623[3]
	GC (Pd-off)	361	4.12	1.807		
Prairie dogs should be protected.	LO (Pd-on)	56	2.32	1.696	0.675	0.412[1]
	GC (Pd-on)	15	4.27	1.981	31.388	0.000[2]
	LO (pd-off)	181	2.94	1.782	2.052	0.152[3]
	GC (pd-off)	358	4.10	1.842		
The black-footed ferret should be protected.	LO (Pd-on)	55	4.05	1.557	0.051	0.821[1]
	GC (Pd-on)	15	4.87	1.598	8.539	0.004[2]
	LO (Pd-off)	180	4.13	1.607	0.290	0.590[3]
	GC (pd-off)	358	4.69	1.496		
People who live near prairie dog towns are at risk for disease.	LO (Pd-on)	55	4.55	1.719	5.745	0.017[1]
	GC (Pd-on)	15	4.67	1.718	0.456	0.500[2]
	LO (Pd-off)	180	4.26	1.638	1.400	0.237[3]
	GC (Pd-off)	361	3.81	1.496		
Landowners should have the choice to remove or control prairie dogs from their property.	LO (Pd-on)	56	6.14	1.710	0.110	0.741[1]
	GC (Pd-on)	15	5.87	1.457	5.707	0.017[2]
	LO (Pd-off)	182	6.31	1.129	1.210	0.272[3]
	GC (Pd-off)	359	5.56	1.478		
I enjoy the presence of eagles and hawks.	LO (pd-on)	56	5.45	1.306	2.832	0.093[1]
	GC (Pd-on)	15	6.13	1.246	9.888	0.002[2]
	LO (Pd-off)	181	5.15	1.540	0.050	0.822[3]
	GC (Pd-off)	360	5.74	1.234		

(Continued).

Table 31 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	LO (Pd-on)	56	2.79	1.914	2.825	0.093[1]
	GC (Pd-on)	15	4.13	2.031	22.191	0.000[2]
	LO (Pd-off)	182	3.32	1.707	0.091	0.763[3]
	GC (Pd-off)	359	4.50	1.759		
Prairie dogs are part of the natural environment.	LO (Pd-on)	56	3.68	1.908	1.071	0.301[1]
	GC (Pd-on)	15	5.53	1.125	34.626	0.000[2]
	LO (Pd-off)	179	4.41	1.631	4.609	0.032[3]
	GC (Pd-off)	358	5.28	1.396		
Bison coexisted with prairie dogs for hundreds of years.	LO (Pd-on)	55	4.73	1.367	0.458	0.499[1]
	GC (Pd-on)	15	5.80	1.146	18.921	0.000[2]
	LO (Pd-off)	180	4.81	1.358	1.150	0.284[3]
	GC (Pd-off)	359	5.45	1.258		
Prairie dogs should not be protected.	LO (Pd-on)	56	5.70	1.617	1.716	0.191[1]
	GC (Pd-on)	15	3.93	2.219	29.024	0.000[2]
	LO (Pd-off)	181	5.08	1.819	0.751	0.387[3]
	GC(Pd-off)	359	3.81	1.884		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO (Pd-on)	56	3.57	1.512	0.276	0.600[1]
	GC (Pd-on)	15	3.80	1.207	2.530	0.112[2]
	LO (Pd-off)	181	3.59	1.394	0.180	0.672[3]
	GC (Pd-off)	358	3.99	1.192		

Table 32. Agreement between landowners (LO) and general citizens (GC) that lived in counties with a high abundance of black-tailed prairie dog colonies (≥30) and those that lived in counties with a low abundance of black-tailed prairie dog colonies (<30) relative to statements regarding the black-tailed prairie dog. Likert scale: 1=strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree,and 7 = strongly agree). Two-way ANOVA was used to determine an interaction (P≤0.01). [1]=high*low,[2]=LO*GC, [3]=high/low*LO/GC, * =significance for the interaction

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO-High	30	1.50	1.196	9.333	0.002[1]
	GC-High	20	3.30	2.130	28.736	0.000[2]
	LO-Low	209	2.67	1.850	1.502	0.221[3]
	GC-Low	360	3.80	1.814		
Prairie dogs are part of the American heritage.	LO-High	30	3.37	1.847	9.821	0.002[1]
	GC-High	21	4.48	1.834	14.998	0.000[2]
	LO-Low	208	4.27	1.770	0.244	0.621[3]
	GC-Low	354	5.15	1.649		
Prairie dogs are a nuisance.	LO-High	30	5.73	2.212	3.388	0.066[1]
	GC-High	21	5.33	1.880	7.790	0.005[2]
	LO-Low	208	5.60	1.783	1.808	0.179[3]
	GC-Low	358	4.45	1.869		
Other species that rely on the prairie dog should be protected.	LO-High	30	3.57	1.755	4.821	0.028[1]
	GC-High	20	4.70	1.867	15.659	0.000
	LO-Low	206	4.29	1.627	0.859	0.354[3]
	GC-Low	358	4.99	1.446		
Prairie dogs should be protected under the Endangered Species Act.	LO-High	30	1.43	0.935	10.926	0.001[1]
	GC-HSD	21	2.71	1.901	20.900	0.000[2]
	LO-Low	209	2.37	1.755	0.014	0.906[3]
	GC-Low	359	3.58	1.931		
I enjoy watching prairie dogs.	LO-High	30	2.20	1.464	17.214	0.000[1]
	GC-High	21	4.33	2.058	35.027	0.000[2]
	LO-Low	209	3.86	1.888	3.990	0.046[3]
	GC-Low	357	4.91	1.758		

(Continued).

Table 32 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs and cattle can coexist.	LO-High	30	2.17	1.464	3.396	0.066[1]
	GC-High	21	4.14	2.081	34.225	0.000[2]
	LO-Low	210	3.07	1.924	2.376	0.124[3]
	GC-CD	358	4.22	1.726		
Prairie dogs compete with livestock for forage.	LO-High	30	5.87	1.717	7.946	0.005[1]
	GC-High	21	5.14	1.558	15.995	0.000[2]
	LO-Low	210	5.43	1.657	1.119	0.291[3]
	GC-Low	360	4.19	1.653		
Prairie dog burrows cause injury to livestock and horses.	LO-High	30	6.17	1.599	1.850	0.174[1]
	GC-High	21	5.71	1.488	9.152	0.003[2]
	LO-Low	209	6.08	1.230	0.894	0.345[3]
	GC-Low	362	5.21	1.569		
Endangered species that rely on the prairie dog for their survival should be protected.	LO-High	30	3.20	1.400	2.063	0.151[1]
	GC-High	21	4.48	1.887	16.252	0.000[2]
	LO-Low	206	3.86	1.603	1.768	0.182[3]
	GC-Low	356	4.50	1.591		
Poisoning is the best method of control.	LO-High	30	5.50	1.871	3.849	0.050[1]
	GC-High	21	3.95	1.987	34.637	0.000[2]
	LO-Low	210	5.01	1.751	0.028	0.867[3]
	GC-Low	359	3.38	1.845		
The black-footed ferret relies on the prairie dog for its survival.	LO-High	29	3.72	1.437	7.369	0.007[1]
	GC-High	21	3.95	1.359	0.803	0.370[2]
	LO-Low	209	4.27	1.243	0.159	0.690[3]
	GC-Low	358	4.36	1.101		
Prairie dog populations are low enough to warrant protection.	LO-High	30	1.67	1.322	11.418	0.001[1]
	GC-High	21	2.90	1.921	18.571	0.000[2]
	LO-Low	210	2.68	1.706	0.533	0.466[3]
	GC-Low	360	3.56	1.627		
Relocating prairie dogs to another area is the best method for control.	LO-High	30	2.53	1.814	4.386	0.037[1]
	GC-High	21	3.48	1.990	11.710	0.001[2]
	LO-Low	208	3.11	1.921	0.002	0.966[3]
	GC-Low	360	4.07	1.847		

(Continued).

Table 32 (Continued).

Statement	group	(n)	mean score	sd	F	P
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO-High	29	2.34	1.542	4.278	0.039[1]
	GC-High	21	3.43	1.434	18.885	0.000[2]
	LO-Low	206	2.96	1.645	0.775	0.379[3]
	GC-Low	360	3.68	1.193		
Prairie dogs provide little benefit to the environment.	LO-High	29	5.72	1.386	5.731	0.017[1]
	GC-High	21	4.43	1.912	16.829	0.000[2]
	LO-Low	209	4.86	1.770	1.145	0.285[3]
	GC-Low	361	4.10	1.621		
Shooting prairie dogs should be used as a means to control them.	LO-High	30	4.47	1.961	1.669	0.197[1]
	GC-High	21	4.52	1.601	0.869	0.352[2]
	LO-Low	210	4.42	1.749	1.295	0.256[3]
	GC-Low	362	3.85	1.943		
If prairie dogs are not protected, they will become extinct in the future.	LO-High	29	2.69	1.775	6.210	0.013[1]
	GC-High	21	3.33	2.082	8.190	0.004[2]
	LO-Low	201	3.23	1.797	0.220	0.639[3]
	GC-Low	361	4.13	1.779		
Prairie dogs should be protected.	LO-High	30	2.03	1.712	12.184	0.001[1]
	GC-High	21	3.19	1.965	19.418	0.000[2]
	LO-Low	203	2.95	1.761	0.005	0.941[3]
	GC-Low	358	4.14	1.809		
The black-footed ferret should be protected.	LO-High	29	4.34	1.542	0.002	0.960[1]
	GC-High	21	4.48	1.940	2.354	0.125[2]
	LO-Low	202	4.11	1.584	0.921	0.337[3]
	GC-Low	358	4.68	1.464		
People who live near prairie dog towns are at risk for disease.	LO-High	28	4.96	1.856	10.511	0.001[1]
	GC-High	21	4.57	1.720	3.050	0.081[2]
	LO-Low	203	4.22	1.615	0.004	0.947[3]
	GC-Low	361	3.80	1.476		
Landowners should have the choice to remove or control prairie dogs from their property.	LO-High	30	6.67	0.959	9.119	0.003[1]
	GC-High	21	6.33	0.856	5.775	0.017[2]
	LO-Low	204	6.21	1.327	0.624	0.430[3]
	GC-Low	359	5.55	1.473		

(Continued).

Table 32 (Continued).

Statement	group	(n)	mean score	sd	F	P
I enjoy the presence of eagles and hawks.	LO-High	30	5.40	1.248	0.165	0.685[1]
	GC-High	21	5.76	0.831	5.163	0.023[2]
	LO-High	203	5.23	1.516	0.198	0.657[3]
	GC-Low	360	5.77	1.244		
Removing prairie dogs will disturb the natural environment.	LO-High	30	2.37	1.629	4.158	0.042[1]
	GC-High	21	4.38	2.133	36.693	0.000[2]
	LO-Low	204	3.33	1.777	2.665	0.103[3]
	GC-Low	359	4.49	1.737		
Prairie dogs are part of the natural environment.	LO-High	29	3.24	1.883	6.704	0.010[1]
	GC-High	21	5.24	1.640	40.620	0.000[2]
	LO-Low	202	4.38	1.669	5.974	0.015[3]
	GC-Low	358	5.27	1.371		
Bison coexisted with prairie dogs for hundreds of years.	LO-High	28	4.43	1.399	1.162	0.282[1]
	GC-High	21	5.43	1.287	17.735	0.000[2]
	LO-Low	203	4.82	1.354	0.844	0.359[3]
	GC-Low	359	5.46	1.248		
Prairie dogs should not be protected.	LO-High	30	6.00	1.597	8.831	0.003[1]
	GC-High	21	4.52	2.112	25.530	0.000[2]
	LO-Low	203	5.09	1.793	0.115	0.735[3]
	GC-Low	360	3.80	1.867		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO-High	30	3.33	1.373	5.771	0.017[1]
	GC-High	21	3.38	1.465	1.255	0.263[2]
	LO-Low	203	3.63	1.438	0.758	0.384[3]
	GC-Low	357	4.01	1.164		

No interactions were found for the 28 statements between younger and older landowners and general citizens ($P>0.01$) (Table 33). An interaction was found for 1 of the 28 statements between male and female landowners and male and female general citizens ($P<0.01$) (Table 34). Female general citizens disagreed more strongly than female landowners that shooting black-tailed prairie dogs was a good method of control. No interactions were found for the 28 statements between landowners and general citizens with high school diplomas and college degrees (Table 35).

The majority of landowners and general citizens knew when the black-tailed prairie was most active and the species' predominant food source (Table 36), although, significantly more landowners knew the predominant food source of the black-tailed prairie dog than did general citizens ($X^2=49.769$, df=1, $P=0.000$). Less than 40% knew to what family the black-tailed prairie dog belonged and less than 20% knew to what disease the black-tailed prairie dog was most susceptible.

Regardless of the proximity of a black-tailed prairie dog colony to the respondent's residence and whether or not the respondent had black-tailed prairie dogs on their property or not, significantly more landowners knew on what black-tailed prairie dogs predominantly fed than did general citizens ($X^2=19.304$, df=3, $P=0.000$; $X^2=30.517$, df=3, $P=0.000$) (Table 37 and 38). Despite which county the respondent lived, significantly more landowners knew to what family black-tailed prairie dogs belonged ($X^2=51.685$, df=3, $P=0.000$) and to what disease black-tailed prairie dogs were most susceptible ($X^2=45.280$, df=3, $P=0.000$) (Table 39).

Both older and younger landowners and general citizens knew when

Table 33. Agreement between younger (≤ 48 years) and older (≥ 54 years) landowners (LO) and general citizens (GC) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). Two-way ANOVA was used to determine an interaction (P≤0.01). [1]=≤ 48*≥ 54, [2]=LO*GC, [3]=≤ 48/≥ 54*LO/GC, * =significance for the interaction

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO ≤ 48	84	2.83	1.685	2.545	0.111[1]
	GC ≤ 48	153	3.66	1.857	45.614	0.000[2]
	LO ≥ 54	126	2.30	1.839	2.798	0.095[3]
	GC ≥ 54	165	3.67	1.795		
Prairie dogs are part of the American heritage.	LO ≤ 48	84	4.30	1.612	0.215	0.643[1]
	GC ≤ 48	151	5.00	1.697	28.023	0.000[2]
	LO ≥ 54	125	4.10	1.874	0.609	0.435[3]
	GC ≥ 54	162	5.05	1.675		
Prairie dogs are a nuisance.	LO ≤ 48	82	5.72	1.425	0.172	0.679[1]
	GC ≤ 48	152	4.39	1.919	45.313	0.000[2]
	LO ≥ 54	127	5.59	2.048	1.395	0.238[3]
	GC ≥ 54	166	4.66	1.848		
Other species that rely on the prairie dog should be protected.	LO ≤ 48	83	4.41	1.490	10.135	0.002[1]
	GC ≤ 48	153	5.17	1.361	26.846	0.000[2]
	LO ≥ 54	124	4.01	1.741	0.086	0.770[3]
	GC ≥ 54	163	4.69	1.542		
Prairie dogs should be protected under the Endangered Species Act.	LO ≤ 48	84	2.30	1.551	0.012	0.912[1]
	GC ≤ 48	153	3.48	1.920	56.586	0.000[2]
	LO ≥ 54	126	2.21	1.755	0.152	0.697[3]
	GC ≥ 54	166	3.53	1.981		
I enjoy watching prairie dogs.	LO ≤ 48	84	3.98	1.728	4.099	0.043[1]
	GC ≤ 48	152	4.86	1.831	46.299	0.000[2]
	LO ≥ 54	126	3.37	2.093	2.403	0.122[3]
	GC ≥ 54	165	4.78	1.801		
Prairie dogs and cattle can coexist.	LO ≤ 48	84	3.17	1.769	1.067	0.302[1]
	GC ≤ 48	151	4.13	1.745	53.929	0.000[2]
	LO ≥ 54	127	2.76	1.937	2.087	0.149[3]
	GC ≥ 54	16	4.19	1.775		

(Continued).

Table 33 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs compete with livestock for forage.	LO ≤ 48	84	5.25	1.649	0.480	0.489[1]
	GC ≤ 48	153	4.31	1.615	56.271	0.000[2]
	LO ≥ 54	127	5.54	1.694	1.566	0.211[3]
	GC ≥ 54	166	4.22	1.735		
Prairie dog burrows cause injury to livestock and horses.	LO ≤ 48	84	6.06	1.134	0.010	0.920[1]
	GC ≤ 48	153	5.39	1.434	38.844	0.000[2]
	LO ≥ 54	126	6.16	1.261	0.799	0.372[3]
	GC ≥ 54	168	5.27	1.549		
Endangered species that rely on the prairie dog for their survival should be protected.	LO ≤ 48	82	3.96	1.519	7.627	0.006[1]
	GC ≤ 48	151	4.74	1.543	19.394	0.000[2]
	LO ≥ 54	125	3.70	1.671	0.942	0.332[3]
	GC ≥ 54	164	4.20	1.625		
Poisoning is the best method of control.	LO ≤ 48	84	4.64	1.808	7.617	0.006[1]
	GC ≤ 48	152	3.28	1.747	76.193	0.000[2]
	LO ≥ 54	127	5.18	1.748	0.248	0.619[3]
	GC ≥ 54	166	3.66	1.990		
The black-footed ferret relies on the prairie dog for its survival.	LO ≤ 48	83	4.18	1.191	0.009	0.924[1]
	GC ≤ 48	152	4.35	1.158	1.031	0.310[2]
	LO ≥ 54	126	4.23	1.322	0.313	0.576[3]
	GC ≥ 54	167	4.28	1.080		
Prairie dog populations are low enough to warrant protection.	LO ≤ 48	84	2.80	1.619	0.917	0.339[1]
	GC ≤ 48	152	3.48	1.496	39.995	0.000[2]
	LO ≥ 54	127	2.41	1.697	2.829	0.093[3]
	GC ≥ 54	167	3.59	1.715		
Relocating prairie dogs to another area is the best method for control.	LO ≤ 48	84	3.20	1.734	0.107	0.743[1]
	GC ≤ 48	152	4.01	1.800	24.715	0.000[2]
	LO ≥ 54	126	3.10	2.023	0.065	0.800[3]
	GC ≥ 54	167	3.99	1.953		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO ≤ 48	83	3.20	1.463	13.704	0.000[1]
	GC ≤ 48	152	3.84	1.157	37.293	0.000[2]
	LO ≥ 54	123	2.63	1.686	0.934	0.334[3]
	GC ≥ 54	167	3.50	1.236		

(Continued).

Table 33 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs provide little benefit to the environment.	LO ≤ 48	84	4.61	1.552	15.899	0.000[1]
	GC ≤ 48	153	3.90	1.555	29.758	0.000[2]
	LO ≥ 54	125	5.30	1.761	0.498	0.481[3]
	GC ≥ 54	167	4.39	1.693		
Shooting prairie dogs should be used as a means to control them.	LO ≤ 48	84	4.77	1.638	6.385	0.012[1]
	GC ≤48	153	4.07	1.989	12.526	0.000[2]
	LO ≥ 54	127	4.24	1.854	0.433	0.511[3]
	GC ≥ 54	168	3.75	1.907		
If prairie dogs are not protected, they will become extinct in the future.	LO ≤ 48	81	3.21	1.618	0.654	0.419[1]
	GC ≤ 48	154	4.14	1.754	35.456	0.000[2]
	LO ≥ 54	122	3.04	1.829	0.052	0.820[3]
	GC ≥ 54	166	4.05	1.877		
Prairie dogs should be protected.	LO ≤ 48	82	2.96	1.636	1.510	0.220[1]
	GC ≤ 48	154	4.10	1.790	55.376	0.000[2]
	LO ≥ 54	123	2.68	1.812	0.233	0.630[3]
	GC ≥ 54	164	3.98	1.894		
The black-footed ferret should be protected.	LO ≤ 48	81	4.05	1.572	0.077	0.781[1]
	GC ≤ 48	154	4.74	1.454	15.948	0.000[2]
	LO ≥ 54	122	4.13	1.686	0.724	0.395[3]
	GC ≥ 54	164	4.58	1.574		
People who live near prairie dog towns are at risk for disease.	LO ≤ 48	81	4.10	1.480	2.267	0.133[1]
	GC ≤ 48	154	3.82	1.517	10.251	0.001[2]
	LO ≥ 54	122	4.50	1.773	1.667	0.197[3]
	GC ≥ 54	166	3.86	1.527		
Landowners should have the choice to remove or control prairie dogs from their property.	LO ≤ 48	82	6.18	1.306	0.034	0.854[1]
	GC ≤ 48	154	5.60	1.393	27.309	0.000[2]
	LO ≥ 54	123	6.30	1.293	0.535	0.465[3]
	GC ≥ 54	165	5.53	1.583		
I enjoy the presence of eagles and hawks.	LO ≤ 48	82	5.30	1.411	0.914	0.340[1]
	GC ≤48	154	5.77	1.366	20.767	0.000[2]
	LO ≥ 54	123	5.09	1.584	0.639	0.425[3]
	GC ≥ 54	166	5.75	1.110		

(Continued).

Table 33 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	LO ≤ 48	82	3.54	1.650	12.631	0.000[1]
	GC ≤ 48	154	4.72	1.702	63.557	0.000[2]
	LO ≥ 54	123	2.93	1.723	0.132	0.716[3]
	GC ≥ 54	165	4.22	1.758		
Prairie dogs are part of the natural environment.	LO ≤ 48	82	4.62	1.358	13.230	0.000[1]
	GC ≤ 48	153	5.37	1.366	51.276	0.000[2]
	LO ≥ 54	120	3.89	1.828	2.928	0.088[3]
	GC ≥ 54	165	5.10	1.421		
Bison coexisted with prairie dogs for hundreds of years.	LO ≤ 48	81	4.75	1.356	0.275	0.600[1]
	GC ≤ 48	154	5.49	1.195	32.288	0.000[2]
	LO ≥ 54	121	4.77	1.334	0.432	0.511[3]
	GC ≥ 54	166	5.36	1.289		
Prairie dogs should not be protected.	LO ≤ 48	82	5.02	1.707	1.802	0.180[1]
	GC ≤ 48	154	3.79	1.857	55.331	0.000[2]
	LO ≥ 54	123	5.28	1.848	0.022	0.882[3]
	GC ≥ 54	166	3.99	1.959		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO ≤ 48	81	3.78	1.225	5.625	0.018[1]
	GC ≤48	154	4.06	1.130	6.246	0.013[2]
	LO ≥ 54	123	3.50	1.490	0.002	0.967[3]
	GC ≥ 54	164	3.79	1.285		

Table 34. Agreement between male (M) and female (F) landowners (LO) and male and female general citizens (GC) relative to statements regarding the black-tailed prairie dog. Likert scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). Two-way ANOVA was used to determine an interaction ($P \leq 0.01$). [1]=M*F, [2]=LO*GC, [3]=M/F*LO/GC, * =significance for the interaction

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO-M	201	2.48	1.800	3.049	0.081[1]
	GC-M	266	3.60	1.847	50.024	0.000[2]
	LO-F	40	2.60	1.959	1.253	0.263[3]
	GC-F	119	4.13	1.770		
Prairie dogs are part of the American heritage.	LO-M	200	4.09	1.822	4.547	0.033[1]
	GC-M	261	5.01	1.741	23.905	0.000[2]
	LO-F	40	4.52	1.467	0.124	0.725[3]
	GC-F	119	5.32	1.473		
Prairie dogs are a nuisance.	LO-M	199	5.59	1.899	1.414	0.235[1]
	GC-M	267	4.67	1.853	39.020	0.000[2]
	LO-F	41	5.63	1.714	2.050	0.153[3]
	GC-F	117	4.17	1.890		
Other species that rely on the prairie dog should be protected.	LO-M	200	4.18	1.669	0.127	0.722[1]
	GC-M	264	5.06	1.476	18.222	0.000[2]
	LO-M	38	4.32	1.646	1.365	0.243[3]
	GC-F	119	4.82	1.438		
Prairie dogs should be protected under the Endangered Species Act.	LO-M	200	2.19	1.722	15.388	0.000[1]
	GC-M	266	3.22	1.959	49.909	0.000[2]
	LO-F	41	2.63	1.624	2.268	0.133[3]
	GC-F	119	4.23	1.734		
I enjoy watching prairie dogs.	LO-M	201	3.54	1.952	13.887	0.000[1]
	GC-M	265	4.61	1.846	44.915	0.000[2]
	LO-F	40	4.05	1.907	0.981	0.322[3]
	GC-F	118	5.49	1.489		
Prairie dogs and cattle can coexist.	LO-M	201	2.91	1.912	4.122	0.043[1]
	GC-M	265	4.08	1.808	44.900	0.000[2]
	LO-F	41	3.22	1.796	0.105	0.746[3]
	GC-F	119	4.51	1.610		

(Continued).

Table 34 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs compete with livestock for forage.	LO-M	201	5.61	1.618	12.974	0.000[1]
	GC-M	266	4.43	1.706	45.214	0.000[2]
	LO-F	41	4.95	1.717	0.119	0.730[3]
	GC-F	120	3.88	1.518		
Prairie dog burrows cause injury to livestock and horses.	LO-M	200	6.16	1.141	10.103	0.002[1]
	GC-M	267	5.41	1.495	28.904	0.000[2]
	LO-F	41	5.73	1.775	0.072	0.788[3]
	GC-F	121	4.90	1.655		
Endangered species that rely on the prairie dog for their l survival should be protected.	LO-M	198	3.77	1.636	0.812	0.368[1]
	GC-M	267	4.38	1.697	27.169	0.000[2]
	LO-F	40	3.68	1.457	2.145	0.144[3]
	GC-F	121	4.77	1.343		
Poisoning is the best method of control.	LO-M	201	5.16	1.762	11.932	0.001[1]
	GC-M	266	3.63	1.899	71.737	0.000[2]
	LO-F	41	4.56	1.803	0.051	0.821[3]
	GC-F	119	2.95	1.731		
The black-footed ferret relies on the prairie dog for its survival.	LO-M	200	4.22	1.304	1.115	0.291[1]
	GC-M	265	4.40	1.231	0.697	0.404[2]
	LO-F	40	4.17	1.130	0.468	0.494[3]
	GC-F	119	4.19	0.784		
Prairie dog populations are low enough to warrant protection.	LO-M	201	2.46	1.676	8.624	0.003[1]
	GC-M	267	3.34	1.666	32.378	0.000[2]
	LO-F	41	2.88	1.676	0.190	0.663[3]
	GC-F	119	3.91	1.557		
Relocating prairie dogs to another area is the best method for control.	LO-M	201	3.00	1.927	4.507	0.034[1]
	GC-M	266	3.85	1.913	26.979	0.000[2]
	LO-F	39	3.26	1.743	0.592	0.442[3]
	GC-F	120	4.41	1.703		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO-M	197	2.83	1.645	4.882	0.027[1]
	GC-M	267	3.54	1.295	30.237	0.000[2]
	LO-F	40	3.08	1.559	0.221	0.639[3]
	GC-F	119	3.92	0.993		

(Continued).

Table 34 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs provide little benefit to the environment.	LO-M	200	5.08	1.736	12.526	0.000[1]
	GC-M	267	4.32	1.734	19.852	0.000[2]
	LO-F	40	4.47	1.768	0.001	0.977[3]
	GC-F	120	3.71	1.325		
Shooting prairie dogs should be used as a means to control them.	LO-M	201	4.51	1.758	27.563	0.000[1]
	GC-M	267	4.36	1.808	15.415	0.000[2]
	LO-F	41	4.12	1.887	9.830	0.002[3]*
	GC-F	121	2.83	1.781		
If prairie dogs are not protected, they will become extinct in the future.	LO-M	191	3.02	1.780	9.223	0.002[1]
	GC-M	267	3.96	1.839	20.523	0.000[2]
	LO-F	41	3.68	1.680	0.355	0.552[3]
	GC-F	120	4.40	1.702		
Prairie dogs should be protected.	LO-M	194	2.69	1.724	23.181	0.000[1]
	GC-M	265	3.73	1.859	52.391	0.000[2]
	LO-F	41	3.29	1.874	2.148	0.143[3]
	GC-F	119	4.86	1.536		
The black-footed ferret should be protected.	LO-M	193	4.11	1.621	0.530	0.467[1]
	GC-M	266	4.62	1.562	12.738	0.000[2]
	LO-F	40	4.17	1.412	0.096	0.757[3]
	GC-F	118	4.79	1.358		
People who live near prairie dog towns are at risk for disease.	LO-M	192	4.33	1.638	0.272	0.602[1]
	GC-M	267	3.90	1.539	9.988	0.002[2]
	LO-F	41	4.32	1.635	0.175	0.676[3]
	GC-F	120	3.75	1.404		
Landowners should have the choice to remove or control prairie dogs from their property.	LO-M	195	6.28	1.271	3.528	0.061[1]
	GC-M	265	5.72	1.454	25.551	0.000[2]
	LO-F	41	6.17	1.395	1.208	0.272[3]
	GC-F	120	5.29	1.480		
I enjoy the presence of eagles and hawks.	LO-M	195	5.27	1.479	1.783	0.182[1]
	GC-M	266	5.81	1.214	19.939	0.000[2]
	LO-F	41	5.02	1.541	0.202	0.654[3]
	GC-F	120	5.69	1.249		

(Continued).

Table 34 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	LO-M	195	3.14	1.743	3.645	0.057[1]
	GC-M	266	4.36	1.820	54.075	0.000[2]
	LO-F	41	3.39	1.801	0.247	0.619[3]
	GC-F	119	4.79	1.556		
Prairie dogs are part of the natural environment.	LO-M	192	4.27	1.693	0.033	0.857[1]
	GC-M	264	5.17	1.482	60.502	0.000[2]
	LO-F	41	4.00	1.761	3.628	0.057[3]
	GC-F	120	5.49	1.108		
Bison coexisted with prairie dogs for hundreds of years.	LO-M	193	4.79	1.362	2.131	0.145[1]
	GC-M	266	5.53	1.235	30.740	0.000[2]
	LO-F	40	4.60	1.297	0.002	0.967[3]
	GC-F	119	5.33	1.263		
Prairie dogs should not be protected.	LO-M	195	5.32	1.753	17.842	0.000[1]
	GC-M	266	4.19	1.922	61.117	0.000[2]
	LO-F	41	4.85	1.824	2.901	0.089[3]
	GC-F	120	3.10	1.606		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO-M	194	3.58	1.406	1.414	0.235[1]
	GC-M	264	3.92	1.287	6.965	0.009[2]
	LO-F	41	3.73	1.415	0.000	0.998[3]
	GC-F	119	4.08	0.922		

Table 35. Agreement between landowners (LO) and general citizens (GC) with a high school diploma (HSD) and a college degree (CD) relative to statements regarding the black-tailed prairie dog. Likert scale: 1= strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = no opinion, 5 = somewhat agree, 6 = agree, and 7 = strongly agree). Two-way ANOVA was used to determine an interaction ($P \leq 0.01$). [1]=HSD*CD, [2]=LO*GC, [3]=HSD/CD*LO-GC, * =significance for the interaction

Statement	group	(n)	mean score	sd	F	P
Prairie dogs are important to me.	LO-HSD	73	2.51	1.819	3.372	0.911[1]
	GC-HSD	94	3.61	1.908	27.168	0.000[2]
	LO-CD	66	2.91	1.927	0.012	0.911[3]
	GC-CD	107	3.96	1.832		
Prairie dogs are part of the American heritage.	LO-HSD	72	4.13	1.906	2.595	0.108[1]
	GC-HSD	94	4.74	1.872	14.728	0.000[2]
	LO-CD	66	4.30	1.814	0.509	0.476[3]
	GC-CD	107	5.21	1.618		
Prairie dogs are a nuisance.	LO-HSD	74	5.64	1.772	2.234	0.136[1]
	GC-HSD	96	4.49	2.026	26.327	0.000[2]
	LO-CD	65	5.26	1.947	0.070	0.791[3]
	GC-CD	105	4.23	1.908		
Other species that rely on the prairie dog should be protected.	LO-HSD	71	4.00	1.740	15.526	0.000[1]
	GC-HSD	95	4.57	1.730	18.114	0.000[2]
	LO-CD	66	4.52	1.395	0.788	0.375[3]
	GC-CD	107	5.38	1.218		
Prairie dogs should be protected under the Endangered Species Act.	LO-HSD	73	2.37	1.696	0.116	0.734[1]
	GC-HSD	95	3.41	2.071	32.277	0.000[2]
	LO-CD	66	2.29	1.871	0.533	0.466[3]
	GC-CD	107	3.64	1.905		
I enjoy watching prairie dogs.	LO-HSD	73	3.48	2.135	3.798	0.052[1]
	GC-HSD	93	4.55	2.098	20.156	0.000[2]
	LO-CD	66	4.00	1.922	0.214	0.644[3]
	GC-CD	107	4.87	1.688		
Prairie dogs and cattle can coexist.	LO-HSD	74	3.01	1.934	1.577	0.210[1]
	GC-HSD	95	4.08	1.928	51.639	0.000[2]
	LO-CD	66	3.27	1.886	0.000	0.986[3]
	GC-CD	107	4.34	1.688		

(Continued).

Table 35 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs compete with livestock for forage.	LO-HSD	74	5.84	1.395	2.275	0.132[1]
	GC-HSD	95	4.29	1.833	51.639	0.000[2]
	LO-CD	66	5.35	1.705	1.274	0.260[3]
	GC-CD	107	4.22	1.717		
Prairie dog burrows cause injury to livestock and horses.	LO-HSD	74	6.22	1.010	1.715	0.191[1]
	GC-HSD	97	5.44	1.626	32.797	0.000[2]
	LO-CD	66	6.14	1.006	0.641	0.424[3]
	GC-CD	107	5.11	1.679		
Endangered species that rely on the prairie dog for their survival should be protected.	LO-HSD	73	3.79	1.716	4.014	0.046[1]
	GC-HSD	94	4.14	1.763	13.688	0.000[2]
	LO-CD	65	3.83	1.537	3.253	0.072[3]
	GC-CD	105	4.83	1.509		
Poisoning is the best method of control.	LO-HSD	74	5.12	1.872	2.366	0.125[1]
	GC-HSD	95	3.55	1.988	63.507	0.000[2]
	LO-CD	66	4.85	1.685	0.035	0.851[3]
	GC-CD	106	3.20	1.753		
The black-footed ferret relies on the prairie dog for its survival.	LO-HSD	74	4.35	1.308	0.353	0.553[1]
	GC-HSD	94	4.18	1.200	0.000	0.994[2]
	LO-CD	66	4.26	1.256	1.719	0.191[3]
	GC-CD	107	4.43	1.029		
Prairie dog populations are low enough to warrant protection.	LO-HSD	74	2.57	1.829	1.457	0.228[1]
	GC-HSD	96	3.31	1.773	23.322	0.000[2]
	LO-CD	66	2.62	1.743	0.858	0.355[3]
	GC-CD	107	3.72	1.624		
Relocating prairie dogs to another area is the best method for control.	LO-HSD	74	2.88	1.965	0.087	0.768[1]
	GC-HSD	96	4.15	1.947	29.414	0.000[2]
	LO-CD	64	2.97	1.727	0.539	0.463[3]
	GC-CD	106	3.93	1.780		
Grasses on prairie dog colonies are more nutritious than grasses off colonies.	LO-HSD	72	2.85	1.692	0.174	0.677[1]
	GC-HSD	96	3.61	1.301	25.688	0.000[2]
	LO-CD	64	2.89	1.471	0.019	0.890[3]
	GC-CD	107	3.70	1.223		

(Continued).

Table 35 (Continued).

Statement	group	(n)	mean score	sd	F	P
Prairie dogs provide little benefit to the environment.	LO-HSD	73	5.18	1.670	8.986	0.003[1]
	GC-HSD	96	4.11	1.752	19.367	0.000[2]
	LO-CD	66	4.38	1.761	1.556	0.213[3]
	GC-CD	107	3.79	1.660		
Shooting prairie dogs should be used as a means to control them.	LO-HSD	74	4.41	1.828	0.003	0.955[1]
	GC-HSD	97	3.98	1.979	3.122	0.078[2]
	LO-CD	66	4.33	1.704	0.085	0.771[3]
	GC-CD	107	4.03	1.935		
If prairie dogs are not protected, they will become extinct in the future.	LO-HSD	70	3.09	1.816	0.118	0.732[1]
	GC-HSD	95	4.08	1.796	23.355	0.000[2]
	LO-CD	64	3.06	1.763	0.051	0.822[3]
	GC-CD	107	3.97	1.718		
Prairie dogs should be protected.	LO-HSD	71	2.90	1.845	0.040	0.841[1]
	GC-HSD	93	3.95	1.885	31.951	0.000[2]
	LO-CD	64	2.84	1.766	0.236	0.628[3]
	GC-CD	106	4.08	1.746		
The black-footed ferret should be protected.	LO-HSD	71	4.35	1.559	0.010	0.919[1]
	GC-HSD	93	4.55	1.605	5.649	0.018[2]
	LO-CD	64	4.14	1.379	1.401	0.237[3]
	GC-CD	106	4.73	1.342		
People who live near prairie dog towns are at risk for disease.	LO-HSD	70	4.43	1.690	5.241	0.023[1]
	GC-HSD	95	4.09	1.618	4.829	0.029[2]
	LO-CD	64	4.08	1.693	0.124	0.725[3]
	GC-CD	107	3.62	1.534		
Landowners should have the choice to remove or control prairie dogs from their property.	LO-HSD	72	6.24	1.284	2.631	0.106[1]
	GC-HSD	95	5.88	1.270	14.846	0.000[2]
	LO-CD	64	6.22	1.327	2.269	0.133[3]
	GC-CD	106	5.42	1.466		
I enjoy the presence of eagles and hawks.	LO-HSD	72	5.04	1.657	1.973	0.161[1]
	GC-HSD	95	5.64	1.360	15.542	0.000[2]
	LO-CD	64	5.25	1.414	0.003	0.955[3]
	GC-CD	106	5.87	1.188		

(Continued).

Table 35 (Continued).

Statement	group	(n)	mean score	sd	F	P
Removing prairie dogs will disturb the natural environment.	LO-HSD	72	2.89	1.641	13.815	0.000[1]
	GC-HSD	95	3.98	1.851	37.121	0.000[2]
	LO-CD	64	3.52	1.791	0.253	0.615[3]
	GC-CD	106	4.80	1.715		
Prairie dogs are part of the natural environment.	LO-HSD	71	4.04	1.840	9.910	0.002[1]
	GC-HSD	94	4.97	1.492	33.454	0.000[2]
	LO-CD	64	4.52	1.603	0.152	0.697[3]
	GC-CD	106	5.58	1.302		
Bison coexisted with prairie dogs for hundreds of years.	LO-HSD	72	4.79	1.352	2.174	0.141[1]
	GC-HSD	94	5.28	1.339	25.880	0.000[2]
	LO-CD	63	4.76	1.329	2.833	0.093[3]
	GC-CD	106	5.73	1.126		
Prairie dogs should not be protected.	LO-HSD	72	5.19	1.904	0.000	0.992[1]
	GC-HSD	95	3.88	1.962	39.237	0.000[2]
	LO-CD	64	5.19	1.798	0.001	0.982[3]
	GC-CD	106	3.89	1.817		
Large prairie dog colonies are necessary for the survival of the black-footed ferret.	LO-HSD	72	3.71	1.272	0.118	0.731[1]
	GC-HSD	95	3.91	1.361	5.217	0.023[2]
	LO-CD	64	3.64	1.429	0.706	0.401[3]
	GC-CD	105	4.07	0.880		

Table 36. Comparison of the knowledge between landowners (LO) and general citizens (GC) relative to the black-tailed prairie dog.

Question	Group	n	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO	237	38.4	0.868	0.352
	GC	389	34.7		
When are prairie dogs most active?	LO	242	59.1	0.507	0.507
	GC	390	56.4		
To what disease are prairie dogs most susceptible?	LO	239	21.0	3.690	0.055
	GC	389	15.1		
On what do prairie dogs predominantly feed?	LO	241	88.8	49.795	0.000*
	GC	388	64.4		

Chi-square analysis determined significance.
* =significance ($P \leq 0.01$), df=1

Table 37. Comparison of the knowledge between landowners (LO) and general citizens (GC) that lived in close proximity (≤ 2 miles) of a black-tailed prairie dog colony and those that lived further away (≥ 3 miles) from a colony relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO ≤ 2 miles	42	52.4	4.280	0.233
	GC ≤2 miles	80	33.8		
	LO ≥ 3 miles	87	36.8		
	GC ≥ 3 miles	124	39.5		
When are prairie dogs most active?	LO ≤ 2 miles	44	63.6	0.098	0.992
	GC ≤ 2 miles	80	62.5		
	LO ≥ 3 miles	87	64.4		
	GC ≥ 3 rniles	124	64.5		
To what disease are prairie dogs most susceptible?	LO ≤ 2 miles	43	16.3	0.240	0.971
	GC ≤ 2 miles	79	15.2		
	LO ≥ 3 miles	86	16.3		
	GC ≥ 3 miles	124	17.7		
On what do prairie dogs predominantly feed?	LO ≤ 2 miles	43	86.3	19.304	0.000*
	GC ≤ 2 miles	80	65.2		
	LO ≥ 3 miles	87	88.8		
	GC ≥ 3 miles	122	67.2		

Chi-square analysis determined significance.
* =significance (P≤0.01), df=3

Table 38. Comparison of the knowledge between landowners (LO) and general citizens (GC) that had black-tailed prairie dog colonies on their property (Pd-on) and those that did not have colonies on their property (Pd-off) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO (Pd-on)	55	41.8		
	GC (Pd-on)	179	38.0	1.488	0.685
	LO (Pd-off)	14	42.9		
	GC (Pd-off)	238	34.4		
When are prairie dogs most active?	LO (Pd-on)	56	57.4		
	GC (Pd-on)	183	59.6	0.452	0.929
	LO (Pd-off)	15	53.3		
	GC (Pd-off)	363	57.0		
To what disease are prairie dogs most susceptible?	LO (Pd-on)	56	26.8		
	GC (Pd-on)	180	19.4	5.564	0.135
	LO (Pd-off)	15	20.0		
	GC (Pd-off)	362	14.9		
On what do prairie dogs predominantly feed?	LO (Pd-on)	56	91.1		
	GC (Pd-on)	182	53.3	30.517	0.000*
	LO (pd-off)	15	89.6		
	GC (Pd-off)	361	65.1		

Chi-square analysis determined significance.
* = significance ($P \leq 0.01$), df = 3

Table 39. Comparison of the knowledge between landowners (LO) and general citizens (GC) that lived in counties with a high abundance of black-tailed prairie dog colonies (≥30) and those that lived in low abundance counties (<30) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO-high	29	44.8		
	GC-high	21	37.3	51.685	0.000*
	LO-low	201	47.6		
	GC-low	362	34.3		
When are prairie dogs most active?	LO-high	30	66.7		
	GC-high	21	58.0	1.972	0.578
	LO-low	205	52.4		
	GC-low	363	56.7		
To what disease are prairie dogs most susceptible?	LO-high	30	53.3		
	GC-high	21	15.8	45.280	0.000*
	LO-low	202	47.6		
	GC-low	362	13.3		
On what do prairie dogs predominantly feed?	LO-high	30	96.7		
	GC-high	21	87.7	47.406	0.000*
	LO-low	204	81.0		
	GC-low	361	64.0		

Chi-square analysis determined significance.
* =significance (P≤0.01), df=3

black-tailed prairie dogs were most active than did younger general citizens (X^2=11.279, df=3, P=0.010) (Table 40). Despite the age of the respondent, more landowners knew on what black-tailed prairie dogs predominantly fed than did general citizens (X^2=46.751, df=3, P=0.000). Males landowners and general citizens knew more than female landowners and general citizens for 2 of the 4 knowledge questions (Table 41). More males knew when black-tailed prairie dogs were most active (X^2=18.318, df=3, P=0.000) and to what disease black-tailed prairie dogs were most susceptible (X^2=19.510, df=3, P=0.000) than did females.

Despite the sex of the respondent, more landowners knew on what black-tailed prairie dogs predominantly fed than did general citizens (X^2=54.145, df=3, P=0.000). More respondents with a college degree knew to what family black-tailed prairie dogs belonged despite being a landowner or a general citizen (X^2=13.083, df=3, P=0.004) (Table 42). Fewer landowners with a college degree knew when black-tailed prairie dogs were most active when compared to landowners with a high school diploma and landowners with a high school diploma and college degree (X^2=13.934, df=3, P=0.003). More landowners knew on what black-tailed prairie dogs predominantly fed than did general citizens despite education level (X^2=30.245, df=3, P=0.000).

Table 40. Comparison of the knowledge between younger (≤ 48 years) and older (≥ 54 years) landowners (LO) and general citizens (GC) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO ≤ 48	83	41.6		
	GC ≤ 48	154	34.4	2.661	0.447
	LO ≥ 54	119	39.5		
	GC ≥ 54	167	32.3		
When are prairie dogs most active?	LO ≤ 48	83	56.6		
	GC ≤ 48	154	45.5	11.279	0.010*
	LO ≥ 54	124	62.9		
	GC ≥ 54	168	61.3		
To what disease are prairie dogs most susceptible?	LO ≤ 48	83	12.0		
	GC ≤ 48	154	16.9	10.555	0.014
	LO ≥ 54	121	24.8		
	GC ≥ 54	167	11.3		
On what do prairie dogs predominantly feed?	LO ≤ 48	83	84.3		
	GC ≤ 48	154	61.7	46.751	0.000*
	LO ≥ 54	123	91.9		
	GC ≥ 54	167	62.3		

Chi-square analysis determined significance.
* =significance (P≤0.01), df=3

Table 41. Comparison of the knowledge between male (M) and female (F) landowners (LO) and general citizens (GC) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO-M	193	39.4		
	GC-M	267	36.3	2.189	0.534
	LO-F	39	33.3		
	GC-F	121	31.4		
When are prairie dogs most active?	LO-M	195	63.6		
	GC-M	268	61.9	18.318	0.000
	LO-F	42	40.5		
	GC-F	121	44.6		
To what disease are prairie dogs most susceptible?	LO-M	193	22.3		
	GC-M	267	19.9	19.510	0.000*
	LO-F	41	14.6		
	GC-F	121	0.04		
On what do prairie dogs predominantly feed?	LO-M	194	88.6		
	GC-M	266	69.5	54.145	0.000*
	LO-F	42	88.1		
	GC-F	121	53.7		

Chi-square analysis determined significance.
* = significance ($P \leq 0.01$), df = 3

Table 42. Comparison of the knowledge between landowners (LO) and general citizens (GC) that had a high school diploma (HSD) and a college degree (CD) relative to the black-tailed prairie dog.

Question	Group	(n)	(% of n that answered correctly)	X^2	P
To what family do prairie dogs belong?	LO-HSD	71	29.6		
	GC-HSD	95	26.3	13.083	0.004*
	LO-CD	65	50.8		
	GC-CD	108	42.6		
When are prairie dogs most active?	LO-HSD	72	73.6		
	GC-HSD	96	56.3	13.934	0.003*
	LO-CD	65	43.1		
	GC-CD	108	52.8		
To what disease are prairie dogs most susceptible?	LO-HSD	70	14.3		
	GC-HSD	96	12.5	5.635	0.131
	LO-CD	65	26.2		
	GC-CD	108	18.5		
On what do prairie dogs predominantly feed?	LO-HSD	71	87.3		
	GC-HSD	96	55.2	30.245	0.000*
	LO-CD	65	87.7		
	GC-CD	107	71.0		

Chi-square analysis determined significance.
* = significance ($P \leq 0.01$), df = 3

Discussion

Landowners expressed negative opinions about the black-tailed prairie dog. No differences in opinion were detected between landowners that ranched, farmed, or ranched and farmed their land. Attitudes and opinions were similar for landowners despite the proximity of their residence to a black-tailed prairie dog colony, presence or absence of black-tailed prairie dogs on their property and the age, sex, and education of respondents. Landowners that lived in counties with a high abundance of black-tailed prairie dog colonies were significantly more negative toward the black-tailed prairie dog than those that lived in low abundance counties. Those living in counties with a high abundance of black-tailed prairie dog colonies were possibly more likely to encounter black-tailed prairie dogs, therefore experiencing more conflict.

Most landowners disagreed that the black-tailed prairie dog should be protected and disagreed more strongly that they should be protected under the ESA. They agreed that the black-tailed prairie dog competed with cattle forage and agreed more strongly that their burrows caused injury to livestock and horses. Several landowners claimed that black-tailed prairie dog burrows provided prime habitat for rattlesnakes, which increased the chance of human injury during roundups. Few studies have determined the prevalence of rattlesnakes on black-tailed prairie dog colonies. On the Cimarron National Grassland, in Morton, Co., Kansas, Kretzer and Cully (2001) found significantly more western prairie rattlesnakes (*Crotalus viridis*) on black-tailed prairie dog colonies than outside colony sites. These rattlesnakes used the burrows to

escape the extreme heat of the day during the summer months and to hibernate during the winter months, which would lessen the chance of an encounter with a human. The idea that the black-tailed prairie dog competed with cattle for forage might explain why landowners did not want the black-tailed prairie dog to receive protective status. Controlling black-tailed prairie dogs on rangelands in western South Dakota did not result in increased forage production after four years (Uresk 1985). Hansen and Gold (1977) and O'Meilia et al. (1982) found no difference in steer market mass of those that grazed on black-tailed prairie dog colonies and those that grazed off colonies. Studies have also shown that grasses on prairie dog colonies were higher in quality, digestibility, and productivity, which compensated for the reduced forage availability (O'Meilia et al. 1982, Coppock et al. 1983a). Landowners disagreed that grasses were more nutritious on black-tailed prairie dog colonies than grasses off colonies.

Landowners disagreed that black-tailed prairie dogs were part of the American heritage, considered prairie dogs a nuisance, and did not enjoy watching them. In Montana, Reading and Kellert (1993) found similar opinions of ranchers relative to black-tailed prairie dogs. Landowners in my study agreed that they enjoyed watching eagles and hawks. Landowners might associate eagles and hawks as animals helping to control the black-tailed prairie dog because ferruginous hawk (Culley 1991, Allison et al. 1995), Swainson's hawk (*Buteo swainsoni*), and red-tail hawk (*Buteo jamaicensis*) (Campbell and Clark 1981) were species commonly seen flying over or perching near black-tailed prairie dog colonies. Zinn and Andelt (1999) stated that the understanding of the

linkage between raptors and black-tailed prairie dogs by general citizens was unknown.

Despite the economic cost, landowners agreed that poisoning was the best method to control black-tailed prairie dogs. The majority of landowners stated that they used poison as their method of choice to control black-tailed prairie dogs on their property. They disagreed that relocating black-tailed prairie dogs was the best method of control and expressed no opinion to shooting as a method to control black-tailed prairie dogs. In many Kansas counties, landowners are forced to carry out control efforts or suffer financial penalties (Wuerthner 1997), which may lead them to think poisoning is the best method of control. One study suggested that poisoning was not cost effective (Collins et al. 1984). They projected a 30% annual black-tailed prairie dog repopulation after a poisoning treatment. They found that prairie dog control in the Conata Basin of South Dakota was not economically feasible because the area needed retreatment every three years. Annual maintenance costs were also needed, which exceeded the annual value of grazing increases.

Shooting of black-tailed prairie dogs might serve as a more economical method of controlling and/or managing black-tailed prairie dogs. The revenue generated from sport hunting (equipment, lodging, permit implementation, etc.) might also provide funds for black-tailed prairie dog conservation. The effect of both poisoning and shooting black-tailed prairie dogs on non-target species should be considered. Harmata (1981) reported shooting as the main cause of death for ferruginous hawks in the Texas panhandle. The hawks were attracted

to areas where black-tailed prairie dogs were being hunted, which provided them with an easy meal. This attraction resulted in the birds being shot.

Most landowners expressed no opinion to statements regarding the black-footed ferret. Landowners that lived in counties with a high abundance of black-tailed prairie dog colonies disagreed that the black-footed relied on the black-tailed prairie dog for its survival. Opinions about the black-footed ferret might be more negative in states where reintroductions are occurring or being planned. In Montana, Reading and Kellert (1993) found that ranchers had negative attitudes and opinions toward the black-footed ferret where a reintroduction was being proposed.

Providing landowners with more facts about the black-tailed prairie dog might not change their attitude or opinion because of their strongly held beliefs and attitudes. Reading and Kellert (1993) provided ranchers with knowledge about the black-footed ferret and although they scored high on black-footed ferret knowledge, they were the most antagonistic toward a proposed reintroduction when compared to ranchers with less knowledge.

For decades landowners have been exposed to rancher philosophy and government policy, which have provided them with positive incentives for poisoning black-tailed prairie dogs. Miller et al. (1990) proposed that government agencies institute new incentives and compensate landowners financially for the conservation of the black-tailed prairie dog. Money and personnel that are currently used for controlling black-tailed prairie dogs could be allocated to landowners for their cooperation and participation in conserving black-tailed

prairie dogs and their habitat. Miller et al. (1990) also suggested providing landowners with tax breaks, product marketing help, and free publicity in exchange for their conservation efforts.

General citizens agreed that the black-tailed prairie dog was part of the natural environment and part of the American heritage. They expressed no opinion regarding its protection but somewhat disagreed that they should be protected under the ESA. General citizens agreed that landowners should have the right to control or remove black-tailed prairie dogs from their property, therefore protection under the ESA might infringe on that right. They also agreed that black-tailed prairie dog burrows caused injury to livestock and horses. Although evidence of injury is not well documented, the belief that black-tailed prairie dog burrows cause injury is high among rural citizens (Hoogland, 1985).

General citizens somewhat disagreed that poisoning was the best method to control prairie dog and expressed no opinion to shooting or relocating black-tailed prairie dogs as a method of control. The general public might associate poisoning with cruelty as well as bad environmental practice. Zinn and Andelt (1999) found that greater knowledge was associated with greater acceptance of poisoning black-tailed prairie dogs. Providing general citizens with more knowledge about the black-tailed prairie dog might result in greater acceptance of this method as a management tool. Agencies might experience less opposition from general citizens to shooting or relocating black-tailed prairie dogs as a management tool, although relocating black-tailed prairie dogs can be expensive and time consuming. Griffith et al. (1989) suggested that translocation

should be a last resort for managing a species. In one habitat conservation plan, 80% of 480 Utah prairie dogs died within three months after being relocated (Watchman et al. 2001). Griffith et al. (1989) suggested that translocation be used before species density was low and populations were in decline.

The majority of general citizens knew when black-tailed prairie dogs were most active and their predominant food source. Less than 50% knew to what family black-tailed prairie dogs belonged and to what disease they were most susceptible. These findings were similar to that of landowners. No differences in knowledge were found for proximity of a black-tailed prairie dog colony to a resident's home, presence or absence of black-tailed prairie dogs on the resident's property, and education. Males knew significantly more about the black-tailed prairie dog than females. Older general citizens that lived in counties with a high abundance of black-tailed prairie dog colonies knew slightly more than younger citizens that live in low abundance counties.

Significant differences in opinion were determined between landowners and general citizens. Landowners were significantly more negative toward the black-tailed prairie dog than general citizens. No interactions were obtained for presence and absence of black-tailed prairie dogs on the resident's property, county residence, age, sex, and education. The few differences detected might be due to a type I error. Landowners that lived within 2 miles of a black-tailed prairie dog colony were more negative relative to black-tailed prairie dogs than those that lived 3 or more miles from a colony. Landowners had more contact with black-tailed prairie dogs than general citizens and felt they negatively

affected their livelihood. This could be problematic for any conservation or management plan that might be implemented. General citizens did agree that black-tailed prairie dog burrows caused injury to livestock and that landowners should have the right to control or remove black-tailed prairie dogs from their property, therefore they might favor a conservation or management plan that benefited both the black-tailed prairie dog and landowners. If landowners received support from the general public, they might be more willing to participate in the conservation of the black-tailed prairie dog.

Education programs have rarely been successful in changing attitudes and beliefs if they were strongly held (Chaiken and Stangor 1987). Education programs might be beneficial for those with little knowledge and understanding of the black-tailed prairie dog ecosystem. Educational programs might increase tolerance and cooperation of stakeholders relative to the black-tailed dog and any conservation or management plans that might be implemented. Effective public relations programs will need more than education to be successful. Reading and Kellert (1993) suggested that programs also provide financial incentives, use people with similar cultural and socioeconomic backgrounds to convey messages, study the most effective method of conveying information, and use law enforcement to enforce penalties to those not in compliance with black-tailed prairie dog conservation and/or management. They found that ranchers in Phillips County, Montana were more receptive to information provided by other ranchers that had a positive experience from a black-footed ferret reintroduction than those that did not receive positive information from

other ranchers. The study also showed that most ranchers received their information from newspapers, books, and magazines. Determining how Kansas's landowners and general citizens primarily receive their information and who they trust will be essential in developing an appropriate conservation and management plan. Educating landowners and general citizens might increase their tolerance, appreciation, and understanding of the importance of the black-tailed prairie dog ecosystem. As the federal government continues to subsidize black-tailed prairie dog poisoning, landowners will continue to believe that black-tailed prairie dogs are agricultural pests. Landowners currently receive incentives to remove black-tailed prairie dogs from their property, therefore providing incentives to landowners for conserving the black-tailed prairie dog and its habitat will be essential for the conservation of the black-tailed prairie dog and other species that rely on the black-tailed prairie dog for survival.

CONCLUSION

The black-tailed prairie dog is currently listed as a candidate species. If populations continue to decline because of habitat loss and eradication programs (e.g. poisoning and shooting), conservation will be essential to prevent the extirpation of this species.

My study showed that landowners in Kansas have negative attitudes and opinions relative to the black-tailed prairie dog. This negativity was a result of the long held belief that black-tailed prairie dogs compete with cattle for forage. Another strongly held belief was that black-tailed prairie dog burrows caused injury to livestock and horses.

Educational programs should focus primarily on landowners and, in particular, those who live in close proximity to a black-tailed prairie dog colony and/or in counties with a high abundance of black-tailed prairie dog colonies. Educational programs should also be developed for the general public with an emphasis on reaching the male population.

Reading and Kellert (1993) stated that public relations programs geared toward the conservation of a "controversial species" will need more than education. More knowledge about the species is important but results from their study and my study showed that more knowledge increased negativity. Public relations programs will need to study the most effective method of conveying information to the different populations, provide incentives for participating in black-tailed prairie dog conservation, and determine who they trust to deliver new information. Understanding how landowners and the general public view the black-tailed prairie

dog will help guide wildlife officials in developing the most appropriate educational program. A well developed educational program is vital to conserve the black-tailed prairie dog and its habitat, as well as the species that rely on the black-tailed prairie dog for their own survival.

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Appendix 1

Approval letter

EMPORIA STATE UNIVERSITY

1200 Commercial
Emporia, Kansas
66801-5087

316-341-5351
316-341-5909 fax
www.emporia.edu

GRADUATE STUDIES AND RESEARCH
RESEARCH AND GRANTS CENTER
Campus Box 4003

December 14, 2000

Lynne Fox-Parrish
132 W. 12th Ave., Apt. 11
Emporia, KS 66801

Dear Ms. Fox-Parrish:

The Institutional Review Board reviewed your application for approval to use human subjects, entitled "Survey of Landowners/Managers' Attitudes and Opinions Toward Prairie Dogs." I am pleased to inform you that your application was approved and you may begin your research with subjects as outlined in your application materials.

On behalf of the Institutional Review Board, I wish you luck with your research project. If I can help you in any way, do not hesitate to contact me.

Sincerely,

Timothy M. Downs

Timothy M. Downs, Ph.D.
Dean, Graduate Studies and Lifelong Learning

pf

cc: Elmer Finck

Appendix 2

Pilot survey letter

November 15, 2000

Dear Pilot study participant:

My name is Lynne Fox-Parrish and I am a graduate student in the Department of Biological Sciences at Emporia State University. For my thesis I will be conducting a survey on the attitudes and opinions of landowners toward the black-tailed prairie dog.

On 31 July 1998, the National Wildlife Federation (NWF) petitioned the United States Fish and Wildlife Service (USFWS) to list the black-tailed prairie dog as threatened throughout its range under the Endangered Species Act. Landowners/managers might be experiencing conflict with different species of wildlife, particularly black-tailed prairie dogs. The purpose of my study is to determine the knowledge, attitudes, and opinions from landowners and managers toward the black-tailed prairie dog. The results generated from my study will help determine if any conflicts with the black-tailed prairie dog exist, how these conflicts are perceived, and if they can be alleviated. Minimizing conflict will be vital for the conservation of the black-tailed prairie dog.

I have enclosed a survey for your review. I would appreciate any comments or suggestions regarding the survey design and/or content. As members of the black-tailed prairie dog conservation task force, your input will be helpful in developing a quality survey. I appreciate your time and effort.

Sincerely,

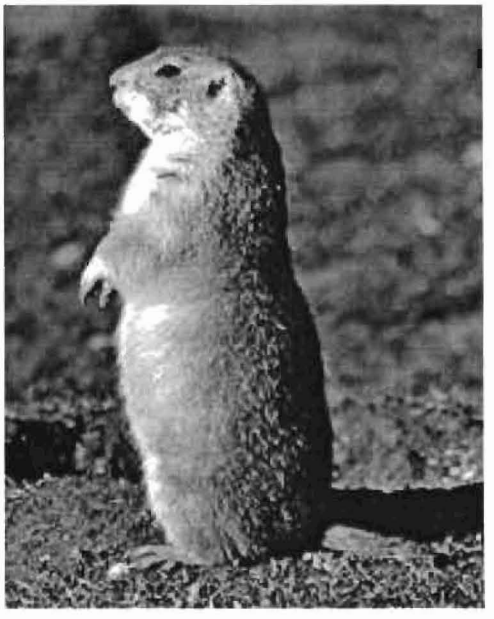
Lynne Fox-Parrish
Graduate Student
Emporia State University
316-341-5101
email: parrishl@emporia.edu

Appendix 3

Pilot survey

LANDOWNER SURVEY

ATTITUDES AND OPINIONS TOWARD AND KNOWLEDGE OF PRAIRIE DOGS



Your input for this survey is vital in helping Emporia State University understand the positive and/or negative relationship that exists between landowners/managers and prairie dogs. This survey is being conducted by a biology graduate student as a thesis project for Emporia State University.

ITEMS 1-30

Using the scale below, circle the number that best corresponds with the statement that best represents your opinion.

1 = Strongly Disagree
2 = Disagree
3 = Somewhat Disagree
4 = No Opinion
5 = Somewhat Agree
6 = Agree
7 = Strongly Disagree

1. Prairie dogs are important to me.
   1 2 3 4 5 6 7
2. Prairie dogs are part of the American Heritage.
   1 2 3 4 5 6 7
3. Prairie dogs are a nuisance.
   1 2 3 4 5 6 7
4. Other species rely on prairie dogs for their survival.
   1 2 3 4 5 6 7
5. Prairie dogs should be protected under the Endangered Species Act.
   1 2 3 4 5 6 7
6. Prairie dogs should be protected.
   1 2 3 4 5 6 7
7. Destroying prairie dogs will help protect farmers and ranchers from damage.
   1 2 3 4 5 6 7
8. Prairie dogs should be destroyed in my community but protected in others.
   1 2 3 4 5 6 7
9. Prairie dogs compete with livestock for forage.
   1 2 3 4 5 6 7
10. Prairie dog burrows cause livestock and horses to break their legs.
    1 2 3 4 5 6 7
11. Endangered species that rely on the prairie dog for their survival should be protected.
    1 2 3 4 5 6 7
12. Poisoning is the best method for controlling prairie dogs.
    1 2 3 4 5 6 7
13. The black-footed ferret relies on the prairie dog for its own survival.
    1 2 3 4 5 6 7

14. Prairie dog populations are low enough to warrant protection.
    1 2 3 4 5 6 7
15. Relocating prairie dogs to another area is the best method for control.
    1 2 3 4 5 6 7
16. Large prairie dog colonies are necessary for the survival of the black-footed ferret.
    1 2 3 4 5 6 7
17. Prairie dogs provide little benefit to the environment.
    1 2 3 4 5 6 7
18. Prairie dogs should be controlled but not eliminated.
    1 2 3 4 5 6 7
19. Shooting of prairie dogs should be used as a means to control them.
    1 2 3 4 5 6 7
20. If prairie dogs are not protected, they will become extinct in the near future.
    1 2 3 4 5 6 7
21. I enjoy watching prairie dogs.
    1 2 3 4 5 6 7
22. The black-footed ferret should be protected.
    1 2 3 4 5 6 7
23. People who live near prairie dog towns are at risk for disease.
    1 2 3 4 5 6 7
24. Landowners should have the choice to remove prairie dogs from their property.
    1 2 3 4 5 6 7
25. I enjoy the presence of eagles and hawks.
    1 2 3 4 5 6 7
26. Removing prairie dogs will disturb the natural environment.
    1 2 3 4 5 6 7
27. Prairie dogs are part of the natural environment.
    1 2 3 4 5 6 7
28. Bison coexisted with prairie dogs for hundreds of years.
    1 2 3 4 5 6 7
29. Prairie dog feeding behavior results in plants that are more nutritious.
    1 2 3 4 5 6 7

Please (x or ✓) one box for each answer

31. Prairie dogs belong to the same family as:

- Dogs ☐
- Rabbits ☐
- Squirrels ☐
- Mice ☐
- Not Sure ☐

32. Do prairie dogs hibernate in the winter?

- Yes ☐
- No ☐

33. Which one of the following diseases are prairie dogs most susceptible to?

- Malaria ☐
- Plague ☐
- Rabies ☐
- Not Sure ☐

34. On what do prairie dogs predominantly feed?

- Insects ☐
- Flowers ☐
- Grasses ☐
- Leaves ☐
- Not Sure ☐

35. Please indicate your age.

_____

36. Which of the following best represents your highest level of education.

- 8^{th} grade or less ☐
- Some High School ☐
- High School Diploma ☐
- College Degree ☐

37. Do you own/manage land in Kansas?

Yes ☐ If yes, how many acres do you own?
_____

No ☐

38. In what county do you reside? _____

39. Do you have prairie dogs on your property?

Yes ☐ If yes, how many prairie dogs do you believe currently live on your property?
_____

No ☐ If no, how far away (in miles) from your property is the nearest prairie dog colony?
_____

40. Which of the following best represents your profession?

Rancher ☐
Farmer ☐
Other (please specify)_____

41. Have you ever had to control prairie dogs on your property?

Yes ☐ If yes, what method of control have you used? _____

No ☐

PLEASE USE THE FOLLOWING SPACE TO PROVIDE ANY SUGGESTIONS OR COMMENTS.

For further comments, please contact:

Lynne Fox-Parrish
Emporia State University
316-341-5101
e-mail: parrishl@emporia.edu

Dr. Elmer J. Finck
Emporia State University
316-341-5623
e-mail: finckelm@emporia.edu

THANK YOU FOR YOUR PARTICIPATION!!

Appendix 4

Awareness letter

January 8, 2001

Dear landowner/manager:

You have been selected to participate in a survey that will determine your attitudes, opinions, and knowledge relative to prairie dogs. The survey will arrive within a week. I, Lynne Fox-Parrish, am a graduate student at Emporia State University and am conducting the survey.

Your name was randomly drawn from a list of rural landowners/managers living in your county. You are assured confidentiality. Your survey will have an identification number for mailing purposes only. Your name will never appear in the questionnaire or be used in data analysis.

The survey is being conducted to determine attitudes and opinions of landowners/managers in the western two-thirds of Kansas relative to prairie dogs. The study will also determine knowledge levels, awareness, and tolerance levels that landowners/managers have of these animals.

Completion of the survey will take approximately 10 to 15 minutes. There will be a place on the survey for you to freely comment. Your participation in the study is greatly appreciated and vital to the success of the study. Thank you for your time, effort, and cooperation.

Sincerely,

Lynne Fox-Parrish
Graduate Student
316-341-5101
parrishl@emporia.edu

Elmer J. Finck
Associate Professor
316-341-5623
finckelm@emporia.edu

Appendix 5

Cover letter 1

January 15, 2001

Dear landowner/manager:

Your name was randomly drawn from a list of rural landowners/managers in your county to participate in this survey about prairie dogs. You are assured confidentiality. The survey has an identification number for mailing purposes only. Your name will be removed from this list when your survey is returned.

As a landowner or manager, you may be experiencing conflict with different species of wildlife, particularly prairie dogs. We wish to determine the knowledge, attitudes, and opinions from landowners and managers relative to the prairie dog. The results generated from our study will help determine if any conflicts with the prairie dog exist, how these conflicts are perceived, and if they can be alleviated.

Completion of the survey will take approximately 10 to 15 minutes. Your participation is crucial to the success of this study. Your time, effort, and cooperation are highly appreciated.

Please fill out the enclosed questionnaire and return it in the self-addressed stamped envelope that is provided. By returning the enclosed survey, you have agreed to participate in this study. Thank you very much.

Sincerely,

Lynne Fox-Parrish
Graduate Student
316-341-5101
parrishl@emporia.edu

Elmer J. Finck
Associate Professor
316-341-5623
finckelm@emporia.edu

Appendix 6

Reminder post card

January 30, 2000

Dear landowner/manager:

Two weeks ago a survey seeking your attitudes and opinions relative to prairie dogs was mailed to you. Your opinions are important to us and we hope that you will participate in the study. **We are interested in your attitudes and opinions even if you do not own or manage land.** Please find the time to complete the survey. Your time and effort is very much appreciated.

If you did not receive a survey or have any questions, please feel free to call or e-mail Lynne Fox-Parrish at Emporia State University (316-341-5101 or parrishl@emporia.edu). Thank you.

Appendix 7

Cover letter 2

February 12, 2001

Dear landowner/manager:

Three weeks ago, you received a survey in the mail about the attitudes and opinions relative to prairie dogs. I, Lynne Fox-Parrish, am a graduate student in the Department of Biological Sciences at Emporia State University and am conducting the survey. According to our records, we have not received your survey. Your participation is very important to us and to the success of the study. Your input will help determine feelings, knowledge levels, and conflicts that might exist relative to prairie dogs.

Your participation in the study is confidential. Participation will allow you to voice your opinions, attitudes, and feelings relative to prairie dogs. **Even if you do not own or manage land, we are still interested in your opinions and attitudes.**

Enclosed is a copy of the survey in case you might have lost or misplaced the first copy. If you have already completed and returned the first questionnaire, please disregard this letter. If you have any questions or comments regarding the survey, please feel free to call or e-mail.

Thank you very much. Your time and effort are much appreciated.

Sincerely,

Lynne Fox-Parrish
Graduate Student
316-341-5101
parrishl@emporia.edu

Elmer J. Finck
Associate Professor
316-341-5623
finckelm@emporia.edu

Appendix 8

Survey

LANDOWNER/MANAGER SURVEY

ATTITUDES AND OPINIONS
TOWARD
PRAIRIE DOGS

Your input for this survey is vital in helping us understand the positive and /or negative relationship that exists between landowners/managers and prairie dogs. The survey is being conducted by Lynne Fox-Parrish, a graduate student in the Department of Biological Sciences at Emporia State University.

ITEMS 1-30

Using the scale below, circle the number that corresponds with the statement that best represents your opinion.

1 = Strongly Disagree
2 = Disagree
3 = Somewhat Disagree
4 = No Opinion
5 = Somewhat Agree
6 = Agree
7 = Strongly Disagree

1. Prairie dogs are important to me.
   1 2 3 4 5 6 7
2. Prairie dogs are part of the American Heritage.
   1 2 3 4 5 6 7
3. Prairie dogs are a nuisance.
   1 2 3 4 5 6 7
4. Other species rely on prairie dogs for their survival.
   1 2 3 4 5 6 7
5. Prairie dogs should be protected under the Endangered Species Act.
   1 2 3 4 5 6 7
6. I enjoy watching prairie dogs.
   1 2 3 4 5 6 7
7. Prairie dogs and cattle can coexist.
   1 2 3 4 5 6 7
8. Prairie dogs should be destroyed in my community but protected in others.
   1 2 3 4 5 6 7
9. Prairie dogs compete with livestock for forage.
   1 2 3 4 5 6 7
10. Prairie dog burrows cause injury to livestock and horses.
    1 2 3 4 5 6 7
11. Endangered species that rely on the prairie dog for their survival should be protected.
    1 2 3 4 5 6 7
12. Poisoning is the best method for controlling prairie dogs.
    1 2 3 4 5 6 7
13. The black-footed ferret relies on the prairie dog for its survival.
    1 2 3 4 5 6 7

14. Prairie dog populations are low enough to warrant protection.
    1 2 3 4 5 6 7
15. Relocating prairie dogs to another area is the best method for control.
    1 2 3 4 5 6 7
16. Grasses on prairie dog colonies are more nutritious than grasses off prairie dog colonies.
    1 2 3 4 5 6 7
17. Prairie dogs provide little benefit to the environment.
    1 2 3 4 5 6 7
18. Prairie dogs should be controlled but not eliminated.
    1 2 3 4 5 6 7
19. Shooting prairie dogs should be used as a means to control them.
    1 2 3 4 5 6 7
20. If prairie dogs are not protected, they will become extinct in the future.
    1 2 3 4 5 6 7
21. Prairie dogs should be protected.
    1 2 3 4 5 6 7
22. The black-footed ferret should be protected.
    1 2 3 4 5 6 7
23. People who live near prairie dog towns are at risk for disease.
    1 2 3 4 5 6 7
24. Landowners should have the choice to remove or control prairie dogs from their property.
    1 2 3 4 5 6 7
25. I enjoy the presence of eagles and hawks.
    1 2 3 4 5 6 7
26. Removing prairie dogs will disturb the natural environment.
    1 2 3 4 5 6 7
27. Prairie dogs are part of the natural environment.
    1 2 3 4 5 6 7
28. Bison coexisted with prairie dogs for hundreds of years.
    1 2 3 4 5 6 7
29. Prairie dogs should not be protected.
    1 2 3 4 5 6 7
30. Large prairie dog colonies are necessary for the survival of the black-footed ferret.
    1 2 3 4 5 6 7

Please (x or ✓) one box for each answer

31. Prairie dogs belong to the same family as: (Check one)

Dogs	☐
Rabbits	☐
Squirrels	☐
Mice	☐
Not Sure	☐

32. Prairie dogs are most active during: (check one)

Daytirne	☐
Nighttime	☐
Both day and night	☐
Not Sure	☐

34. Which one of the following diseases are prairie dogs most susceptible to? (check one)

Malaria	☐
Plague	☐
Rabies	☐
Not Sure	☐

34. On what do prairie dogs predominantly feed? (check one)

Insects	☐
Flowers	☐
Grasses	☐
Leaves	☐
Not Sure	☐

35. Please indicate your age and gender.

Age:_____ Gender: M____F_____

36. Which of the following best represents your highest level of education.

Some High School ☐ Some College ☐
High School Diploma ☐ College Degree ☐
Other (please specify)_____

37. Do you own/manage land in Kansas?

Yes ☐ If yes, about how many acres do you own/manage?_____
No ☐

38. In what county do you reside? _____

39. Do you have prairie dogs on your property?

Yes ☐ If yes, about how many prairie dogs do you believe currently live on your property?
_____

No ☐ If no, about how far away (in miles) from your property is the nearest prairie dog colony?
_____

40. Which of the following best represents your profession?

Rancher ☐
Farmer ☐
Other (please specify)_____

41. Have you ever had to control prairie dogs on your property?

Yes ☐ If yes, what method (s) of control have you used? _____
No ☐

PLEASE USE THE FOLLOWING SPACE TO PROVIDE ANY SUGGESTIONS OR COMMENTS.

For further comments or questions, please contact:

Lynne Fox-Parrish
Emporia State University
316-341-5101
parrishl@emporia.edu

Dr. Elmer J. Finck
Emporia State University
316-341-5623
finckelm@emporia.edu

THANK YOU FOR YOUR PARTICIPATION!!

I, Lynne Fox-Parrish, herby submit this thesis/report to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available to use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involved potential financial gain will be allowed without written permission of the author.

Lynne Fox Parrish
Signature of Author

4/25/02
Date

Attitudes and opinions of landowners and general Citizens relative to the black-tailed prairie dog

Title of Thesis

Signature of Graduate Office Staff

5-1-02
Date Received