Social, Economic, and Institutional Analysis Section
4512 McMurry Avenue
Fort Collins, CO 80525-3400
http://www.mesc.usgs.gov/seias

U.S. Geological Survey
Midcontinent Ecological Science Center

Citizen Knowledge and Perception of Black-tailed Prairie Dog Management

Report to Respondents

Natalie R. Sexton
Ayeisha Brinson
Phadrea D. Ponds
Kurt Cline
Berton L. Lamb

USGS
science for a changing world

Contents

Executive Summary 1

Background 4

The Survey 4

Question Summaries 6

Rural/Urban Summaries 13

Glossary of Terms 21

References 22

USGS
science for a changing world

Citizen Knowledge and Perception of Black-tailed Prairie Dog Management

Report to Respondents

Executive Summary

What do citizens know about black-tailed prairie dogs, and where do they get their information? When management decisions need to be made regarding an animal such as the black-tailed prairie dog, an understanding of the species and its relationship to humans is necessary. This includes knowing the biology of the animal, where it lives, and how it interacts with other animals. But it is equally important for those making decisions about the species to understand citizens' knowledge and perceptions so managers can effectively communicate with the public and help the public participate in planning and decision making activities. Unfortunately, what is known about public knowledge, perception, and preferences concerning prairie dog management is limited to data from only a few areas. This study attempts to answer the question: What do people in the short-grass prairie region of the United States know and think about black-tailed prairie dogs?

In the summer of 2000, we sent a survey by mail to citizens of rural, urban, and suburban counties in the short-grass prairie region of the United States.[1] This area includes all or part of 11 states: Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming (see Figure 1, p. 4). A total of 1933 citizens completed the survey for a 56% response rate (Table 1). This report provides a summary of the answers for all the questions in the survey. (Extra copies of this report can be downloaded from our website: http://www.mesc.usgs.gov/seias.[2])

The results show that although people do not believe prairie dogs are a big environmental issue, they favor a balanced approach when dealing with such problems. When asked about their views on environmental policy, respondents reported being more conservative than liberal: 40% reported slightly conservative or conservative environmental views, 24% reported moderate environmental views, and 19% reported slightly liberal or liberal environmental views. Ninteen percent (19%) said they did not know or had not thought about their environmental values. When asked how important black-tailed prairie dogs are compared to other environmental problems, 69% said they are less important than other issues or not an issue at all. Thirty one percent (31%) said prairie dogs are about the same or more important than other issues.

However, when given options for preserving or developing prairie dog habitat and natural resources in general, respondents thought that a balance was best (38% thought "Protection of the environment and the growth of the economy should be given equal consideration in deciding what to do with natural resources"). Thirty three percent (33%) of respondents thought "Protection of the environment should be the most important, but not the only, consideration in deciding what to do with natural resources,"

[1] OMB Control Number 1028-0073.
[2] Please note: Research for this project is still in progress. This report is a draft preliminary report.

and 18% thought "Growth of the economy should be the most important, but not the only, consideration in deciding what to do with natural resources." According to respondents, the most important issues concerning black-tailed prairie dog management are disease prevention (42%), ranch and farm practices (25%), and habitat protection (11%).

Regarding their interaction with black-tailed prairie dogs, 66% of respondents either do not see them at all in a given month or do not see them very often (1-5 times/month). Sixteen percent (16%) see them more than 20 times/month. The majority of respondents (59%) live at least ¼ mile from a prairie dog town. This would indicate that interactions between prairie dogs and the general population are relatively infrequent. However, many respondents indicated that they *do* recreate near prairie dog towns; recreation activities mentioned at least once per year were wildlife/nature viewing (45%), hunting (35%), camping (29%), and hiking/backpacking (25%).

Although only about a third said they have tried to influence land use decisions, respondents reported the most common ways they have been involved are by signing a petition (37%) or attending a public hearing (36%). Other forms of policy influence were much less frequently reported.

The major part of this study focused on what people know about prairie dogs. We tried to learn what people know by asking two sets of questions. First, respondents were asked about the meaning of some terms specific to black-tailed prairie dogs and their management. Respondents were asked if they *knew the meaning*, *had heard of but did not know the meaning*, or *had not heard of* a term. Respondents said they knew the meaning of such terms as burrowing (90%), Endangered Species Act (85%), urban sprawl (68%), prairie ecosystem (61%), biological vulnerability (54%), and habitat conversion (54%). They had heard of but did not know the meaning of *or* had not heard of the following terms: extirpated (86%), diurnal (84%), random demographic events (72%), habitat fragmentation (58%), and Sylvatic plague (51%). We have placed a glossary of terms at the end of this report.

Second, respondents were asked six multiple-choice questions about prairie dogs. A majority of respondents (56%) knew that prairie dogs are active only during the daytime. Almost half (49%) knew that prairie dogs are usually killed with poison when removed and just over 40% knew that plague is a disease that can be transferred from prairie dogs to people. Respondents were less knowledgeable about other facts. Only 29% knew that prairie dogs are related to chipmunks and fewer than 10% knew that prairie dogs have only one litter per year or live in groups called “coteries.”

Just as important as understanding what people know is where they learn this information. For information about prairie dogs, respondents have learned some or a great deal in the past year primarily from personal experience (43%) and friends and neighbors (27%). Only about a quarter of respondents said they learned some or a great deal about prairie dogs from traditional information sources, such as newspapers and television. Of those who said they used newspapers for information, about half (51%) said they relied on local newspapers. Other important, but less frequently reported sources of information were radio (13%), scientific/technical media (12%), mailings (11%), and county extension agents (11%). Although people receive information from many sources, the most important seem to be personal experience and local sources.

In order to understand the dynamics of people’s knowledge, it is important to understand what factors make a difference in what people know. Ethnicity, age, occupation, gender, income, ideology, and values orientation are important factors. For example, policy makers need to know whether citizen knowledge is associated with age or ideology. Understanding these relationships is the primary way in which the results can be used to help managers and policy makers better communicate with the public. We will summarize those relationships in our final project report. For this summary report, we can describe who responded to our survey. Their average age was 53. Although more men (72%) than women (28%) completed the survey, a sufficient number of women responded (531) to allow a reliable characterization of their answers. Most respondents were white (94%) and not of Hispanic or Latino ethnicity. Fifty six percent (56%) of respondents have completed at least some college or higher degree. The occupation of most respondents is in professional/technical (26%), agriculture (19%), or retired (21%) categories. The average income of respondents is $40,000-49,000/year.

A few earlier reseachers have investigated people's knowledge of prairie dogs (Kellert 1985; Reading 1999; Zinn and Andelt 2000). Those studies only covered local areas, but they found differences between urban and rural respondents. Therefore, we divided our sample into rural, suburban, and urban counties (Table 1) and received enough responses to reliably characterize each group: rural (721), suburban (673), urban (539).

Our study found some important differences between rural and urban respondents. While rural respondents are more likely to know where the nearest prairie dog town is located and see them more often, urban respondents tend to be more protective of prairie dogs. Not only do residents of urban counties believe protecting the animals is a higher priority, they also see more social benefits arising from this protection. Respondents from urban counties also favor the use of environmentally oriented management options in protecting prairie dogs. Rural and urban respondents agreed on their choices of the most important issue (disease prevention) and the least important issue (tourism and recreation opportunities) concerning the management of prairie dogs. However, urban and rural respondents differed in their levels of reported and factual knowledge. Urban respondents reported knowing more terms related to the management of prairie dogs, while rural respondents possessed higher levels of factual knowledge about prairie dogs.

Background

Black-tailed prairie dogs are native to the short-grass prairie region of North America. It is believed that before the 19th century expansion of the United States prairie dogs inhabited millions of acres of the Great Plains and lived in large colonies west of the Missouri River.

Over the course of the last century, occupied habitat of the prairie dog shrank by nearly 99% (Graber and France 1998; Dolan 1999; Kotliar et al. 1999). Livestock operators implemented extensive poisoning of prairie dogs around 1880. The federal government began subsidizing prairie dog poisoning in 1915 and poisoning quickly became common practice for federal, state, tribal, and county governments (Dunlap 1988). All states within the historic range of the black-tailed prairie dog "classify the species as a pest for agricultural purposes and either permit or require their eradication" (64 Federal Register 57 at 14427). Prairie dog numbers have been further reduced due to disease (i.e., Sylvatic plague; see Barnes 1993), drought, developments for housing projects, cultivation and grazing practices, and recreational shooting (Utah Division of Wildlife Resources and U.S. Fish and Wildlife Service 1991; Graber and France 1998).

Recently, scientists have begun taking a fresh look at prairie dogs because studies have shown that the conservation of prairie dogs is considered by many researchers to be vital not only for *their* survival, but also for the effective conservation of a large number of other grassland species such as the black-footed ferret and ferruginous hawk (U.S. Forest Service 1978; Knopf 1993; Miller et al. 1996, Kotliar et al. 1999). The controversy over the species has been fueled by an emerging scientific understanding of prairie dogs, historical perceptions of the species, and differing attitudes between rural and urban cultures (Zinn and Andelt 2000).

The U.S. Fish and Wildlife Service recently decided that the black-tailed prairie dog deserved protection as a threatened species, but did not list the species because of a backlog of other listed species in greater need of protection (pursuant to Section 4(b)(7) of the Endangered Species Act and the Service's "Listing Priority Guidance" [63 FR 25502]). The black-tailed prairie dog has been added to the Candidate List of Endangered and Threatened Species. The U.S. Fish and Wildlife Service will re-evaluate the status of the species each year. Now, state governments have the opportunity to make changes in how they manage the black-tailed prairie dogs to benefit the species and reduce risks.

The next year is a critical time for the U.S. Fish and Wildlife Service, state governments, and political and community leaders as prairie dog management programs are implemented. Effective action requires not only understanding of the biological aspects, but also the citizen knowledge about prairie dogs and the source of that knowledge.

The Survey

When you want to find out what people think about something, it is best to ask them. What if you want to know what the 14 million people who live in the short-grass prairie region think? With social science research, we don't have the luxury of asking 14 million people. We can, however, ask a portion of those 14 million. When sampling a portion of a population, there are established guidelines for ensuring that the sample does truly represent the whole. The sample needs to be random and large enough to estimate the whole with considerable precision; also everyone must have a known chance of being selected.

We obtained addresses for 4,309 residents[3] of an 11-state area including : Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming

[3] The names and addresses were provided to us by a national marketing company, which compiles names and addresses from residential telephone directories cross-checked by automobile registrations and national Change of Address files released monthly by the U.S. Postal Service.

(Figure 1). These potential respondents were randomly selected from rural, suburban, and urban counties within the study area. We then followed a step-by-step procedure to contact these folks and ask them to participate (this procedure is called the Total Design Method and has resulted in very high response rates; Dillman 1978). We first sent a postcard to all potential respondents to tell them the survey was on its way and to give them an opportunity to decline to participate. We then sent the survey package that included the survey, a postage-paid return envelope, and a letter explaining the study. After that, over the course of 9 weeks, we sent 2 more packages to those who had not responded. As a final attempt, we telephoned approximately 50% of those we had not heard from.[4] The purpose was two-fold: to encourage nonrespondents to respond, and to see if those who had not responded differed from those who had. We achieved the latter by asking 4 questions from the survey and then comparing those answers (telephone respondents) with mail respondents' answers. We found that the telephone respondents were slightly older (average age 60 versus 53) and more likely to reside in urban counties. There were no other statistically significant differences between respondents and nonrespondents. The response rate for the entire survey was 56.4%. A better than 50% response rate is very good for a mail-out survey to the general public; especially in surveys sponsored by the government where incentives cannot be provided (Dillman 2000).

Figure 1. Study area of prairie dog survey.

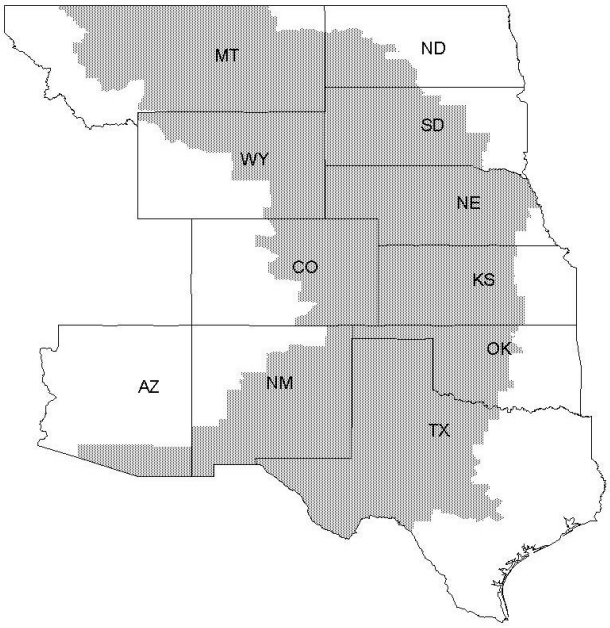


Table 1. Response rate for prairie dog survey

Survey Response Rate	Total	Urban	Suburban	Rural
Total Addresses	4309	1333	1550	1426
Undeliverable Addresses	882	308	346	228
Respondents	1933	539	673	721
Response Rate (%)	56.4	52.6	55.9	60.2
Standard Error (%)	2.2	4.2	3.8	3.7

[4] A Spanish-speaking interviewer was provided for the 9 people called who preferred to answer in Spanish.

Question Summaries

Below (pages 6-12) are the summary statistics for each question that appeared in the survey for the overall study area. Totals range from 99% to 101% due to rounding. Summaries comparing urban, suburban, and rural responses begin on page 13.

1a. Listed below is a series of ideas concerning prairie dog management. For each idea, please rate its benefit to society using the scale below (Please circle the appropriate number).

Various Ideas for Prairie Dog Management	High Benefits to Society		Neutral		Low Benefits to Society
	1	2	3	4	5
Protecting prairie dogs on public and private lands will have…	7.5%	12.0%	23.3%	14.9%	42.3%
Protecting prairie dogs on private lands owned by landowners who are willing to be compensated for their protection will have...	8.4%	16.4%	23.1%	13.1%	38.9%
Protecting prairie dogs only on public lands will have…	9.0%	17.1%	25.2%	15.8%	32.9%
Not protecting prairie dogs will have…	18.0%	8.2%	28.7%	15.1%	30.0%

1b. Recently, there has been a lot of talk about whether prairie dogs will become endangered in the coming years. Generally speaking, how important is deciding what to do about prairie dogs compared to other environmental problems in your state? (Please circle the number of your answer.)

7.6%	One of the more serious environmental problems
23.0%	About the same as any other issue
36.0%	Less important than other environmental issues
33.4%	It is not an issue at all

1c. Listed below are several issues that wildlife experts are confronted with when managing prairie dogs. Please indicate which issue you feel is the most important and which is the least important by putting numbers in the appropriate blanks.

Most Important	Least Important	Term
41.9%	5.0%	Disease prevention
25.0%	4.7%	Ranch and farm practices
11.4%	15.5%	Habitat protection
7.9%	10.3%	Size of prairie dog populations
7.1%	11.0%	Location of prairie dog towns
2.9%	16.3%	Private land development
2.0%	36.2%	Tourism and recreation opportunities
1.7%	1.0%	Other

2. In general, how often do you see prairie dogs?

Zero times per month	1 to 5 times per month	6 to 10 times per month	11 to 20 times per month	More than 20 times per month
35.0%	30.9%	11.2%	6.9%	16.0%

3. Which best describes how far your primary residence is from a prairie dog town?

2.4%	Within 50 yards of your home
6.3%	Between 50 yards and ¼ mile from your home
59.1%	More than ¼ mile from your home
32.2%	I don't know where the nearest prairie dog town to my home is.

4. The next question is on the subject of outdoor activities. Please tell us how often you participate in each of the following outdoor activities near prairie dog towns. (Please circle the appropriate number.)

Activity	Zero times per year	Less than 1 time per year	1 to 2 times per year	3 to 5 times per year	6 to 10 times per year	More than 10 times per year
horseback riding	73.0%	5.9%	5.0%	2.9%	2.1%	11.1%
camping	60.2%	10.2%	14.4%	7.3%	3.1%	4.7%
hunting	56.9%	6.7%	10.3%	8.4%	4.2%	13.4%
hiking/backpacking	67.2%	9.0%	9.5%	5.5%	3.0%	5.8%
bicycling	77.3%	7.0%	4.5%	3.0%	1.7%	6.5%
wildlife/nature viewing	46.0%	8.8%	13.2%	9.1%	6.7%	16.2%
photography	68.5%	8.2%	8.2%	4.8%	3.2%	7.1%
four wheeling	73.7%	4.2%	4.2%	4.5%	3.7%	9.7%
other	58.5%	3.5%	3.8%	4.8%	3.0%	26.4%

5. Below is a list of specific terms that mangers commonly use when they discuss management of prairie dogs. We are asking if you know each term, have heard of the term but do not know its meaning, or have not heard of the term at all. (Please fill in the blank with the number of the most appropriate answer.)

Term	Know Meaning	Heard of but don't know	Have not heard of
Burrowing	90.2%	4.5%	5.3%
Endangered Species Act	84.6%	10.3%	5.1%
Urban sprawl	67.8%	10.2%	21.9%
Prairie ecosystem	60.8%	16.0%	23.2%
Habitat conversion	54.4%	23.5%	22.0%
Biological vulnerability	53.5%	21.5%	25.0%
Habitat fragmentation	41.6%	24.8%	33.6%
Sylvatic Plague	30.5%	20.6%	48.9%
Random demographic events	28.0%	24.3%	47.7%
Diurnal	16.1%	10.9%	73.1%
Extirpated	14.3%	15.2%	70.5%

6. Because preserving or developing prairie dog habitat is one element of environmental policy, it is important to know how you feel about this issue. (Please write in the box the number of the best option.)

6.3%	**Option1:** Protection of the environment in its natural state should be the only consideration in deciding what to do with natural resources.
32.8%	**Option 2:** Protection of the environment should be the most important, but not the only, consideration in deciding what to do with natural resources.
38.4%	**Option 3:** Protection of the environment and the growth of the economy should be given equal consideration in deciding what to do with natural resources.
17.5%	**Option 4:** Growth of the economy should be the most important, but not the only, consideration in deciding what to do with natural resources.
5.0%	**Option 5:** Growth of the economy should be the only consideration in deciding what to do with natural resources.

7. In order to work well with citizens it is important to understand what is commonly known about prairie dogs. Please check the one box for each of the following statements that best completes each sentence. (Correct answer is in **bold text**.)

Prairie dogs that interfere with human activity are most often

Trapped and moved	9.8%
Killed with poison	**49.1%**
Killed by shooting	18.1%
Not sure	23.1%

Prairie Dogs are most active during

Daytime	**56.2%**
Nighttime	6.1%
Both day and night	15.2%
Not sure	22.5%

A disease that can occur in prairie dogs and people is

Rabies	22.9%
Plague	**41.3%**
None	1.1%
Not sure	34.7%

Prairie dogs live in groups called

Harems	6.1%
Coteries	**9.4%**
Pods	9.1%
Not sure	75.4%

How many litters of young do prairie dogs have each year?

1 litter	**9.7%**
2 or 3 litters	22.8%
4 litters	4.5%
Not sure	63.0%

Prairie dogs are most closely related to

Marmots	28.9%
Domestic dogs	1.1%
Chipmunks	**28.7%**
Not sure	41.3%

8. Have you ever tried to influence a decision about land use in any of the following ways? (Please circle the most appropriate answer.)

Influence Decisions	YES	NO
Signing a petition concerning natural resources or the environment	36.9%	63.1%
Attending a public hearing	36.2%	63.8%
Contacting or writing a U.S. senator, member of congress, or state legislator	24.3%	75.7%
Contacting or writing a state/federal agency	23.7%	76.3%
Joining a natural resource or environmental interest group	12.8%	87.2%
Becoming a member of a citizen advisory group	9.0%	91.0%
Helping to organize a petition concerning natural resources or the environment	6.6%	93.4%
Leading a citizen advisory group	2.7%	97.3%
Leading a natural resource or environmental interest group	2.0%	98.0%

9. How much would you say that you have learned in the past year about prairie dogs from the following sources? (Please circle the most appropriate answer.)

Source	None	Not Much	Some	A Great Deal
Personal experience	43.3%	13.3%	26.0%	17.3%
Friends and neighbors	56.9%	15.7%	20.7%	6.6%
Television	56.7%	19.5%	20.3%	3.4%
Newspapers	59.2%	17.2%	20.1%	3.6%
Radio	69.6%	17.2%	12.1%	1.1%
General mailings to your home	71.7%	17.3%	9.9%	1.1%
Scientific/technical media	72.9%	15.1%	9.8%	2.1%
County extension agents	77.8%	10.8%	9.7%	1.7%
Government pamphlets	80.3%	12.5%	6.2%	1.0%
Other	85.6%	5.6%	5.2%	3.5%
Public hearings	83.4%	11.4%	4.5%	0.8%
Organizational meetings	87.1%	8.8%	3.3%	0.8%
WWW or Internet	90.4%	6.1%	2.9%	0.6%

Which newspaper source do you use most often (for those respondents who said they learned about prairie dogs from newspapers in the question above)?

Local Newspaper	50.9%
Regional Newspaper	31.7%
State Newspaper	15.3%
National Newspaper	2.1%

10. In discussions of environmental protection, we hear a lot of talk about liberals and conservatives. Below is a 7-point scale in which the environmental policy views that people might hold are arranged from extremely liberal to extremely conservative. Where would you place yourself on the following scale? (Please circle the appropriate number.)

0.9%	Extremely liberal
5.0%	Liberal
7.3%	Slightly liberal
23.8%	Middle of the road or moderate
16.0%	Slightly conservative
23.8%	Conservative
4.0%	Extremely conservative
19.3%	Don't know; haven't thought much about it

11. There is a lot of talk these days about what our country's goals should be for the next 10 or 15 years. Listed below are some of the goals that different people say should be given top priority. Please write the letter in the blank that most accurately describes your beliefs.

Answers to Question 11 were combined to measure post-materialism and materialism. Post-materialism is the feeling that needs such as a desire for belonging, self-expression, participation in decisions, and quality of life are among the most important personal values. Materialism, on the other hand, is the feeling that more basic needs such as economic security are more important. Below are the summaries for this measurement.

Postmaterial Values	22.0%
Mixed Values	62.1%
Materialist Values	15.8%

12. Please circle the number indicating whether you agree or disagree with the following statements.

Answers to Question 12 were used to create two measures. One measure predicts respondents' environmental behavior and participation (New Environmental Paradigm; Van Liere and Dunlap 1981;1980). The higher the score means more orientated toward environmentalism. The other measure shows respondents' support for science and technology.

Distribution on the New Environmental Paradigm

Low	11%
Medium	47%
High	42%

Support for science and technology

Low	20%
Medium	60%
High	20%

13. Your age 53 (mean) 51 (median)

14. Please identify your gender

72.1% Male 27.9% Female

15. What ethnicity do you consider yourself?

6.2%	Hispanic or Latino
93.8%	Not Hispanic or Latino

16. What racial origin do you consider yourself?

4.7%	American Indian or Alaska Native
0.5%	Asian
0.4%	Black or African American
0%	Native Hawaiian or other Pacific Islander
94.4%	White

17. Where is your current place of residence located?

On a farm or ranch	22.8%
In the country but not on a farm or ranch	13.2%
In a town or village of less than 2,500	29.3%
In a town of 2,500 - 9,999	14.0%
In a city of 10,000 – 24,999	8.1%
In a city of 25,000 – 49,999	4.6%
In a city of 50,000 – 99,999	4.4%
In a city of more than 100,000	3.5%

18. What is your highest level of education?

No formal education	0.2%
Some grade school	0.4%
Completed grade school	2.7%
Some high school	5.4%
Completed high school	23.5%
Technical training	12.1%
Some college/two year degree	25.4%
Completed college	14.8%
Some graduate work	5.5%
An advanced degree	8.8%
Other	1.2%

19. Which category best fits your occupational status?

Professional/Technical	26.3%
Retired	20.7%
Agriculture	18.6%
Self-employed	10.4%
Trade Worker	9.6%
Office Worker	4.0%
Homemaker	3.1%
Student	1.3%
Unemployed	0.4%
Other	5.6%

20. What is your approximate annual family income before taxes?

Less than $10,000	6.2%
$10,000 -19,999	11.6%
$20,000 - 29,999	16.0%
$30,000 - 39,999	15.7%
$40,000 - 49,999	13.4%
$50,000 - $59,999	11.1%
$60,000 - $69,999	6.8%
$70,000 - $79,999	4.9%
$80,000 - $89,999	4.2%
$90,000 - $99,999	2.1%
$100,000 - $109,999	2.1%
$110,000 and above	6.1%

Additional Comments:

Two hundred fifty (12.7%) respondents provided additional comments on the back of the questionnaire related to prairie dog management. We grouped the comments into seven categories. The percentages below are the percent of the 250 respondents who provided written comments:

40.0%	Prairie dogs are generally destructive and should be controlled (e.g., poisoned) or managed (e.g., hunted)
29.6%	Taxpayer money should not be spent to protect prairie dogs. They are not threatened and should not be listed
9.6%	Public opinion, such as this survey or bureaucrats should not determine prairie dog management. It should be determined at a local level (e.g., by farmers and ranchers)
8.0%	Conserve and protect the environment, including prairie dogs
5.6%	The government should protect prairie dogs on public lands, not private lands. Private land owners should be compensated for damages
4.0%	Promote more public awareness, research, and education on prairie dog issues
3.2%	Consider all opinions to choose a middle ground management option

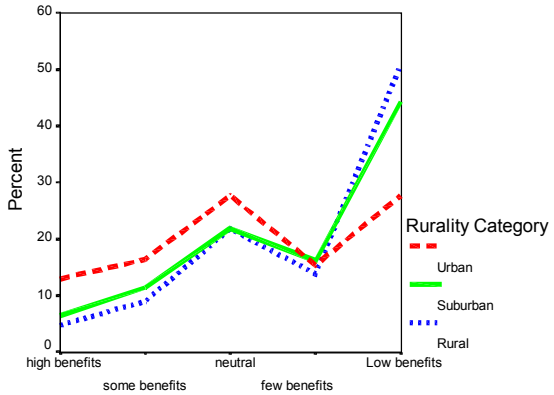
Rural/Urban Summaries

Below are summary statistics for pertinent survey questions comparing rural, suburban, and urban responses. The executive summary contains a recap of these findings.

1a. Listed below is a series of ideas concerning prairie dog management. For each idea, please rate its benefit to society using the scale below.

Protecting prairie dogs on public and private lands will have…

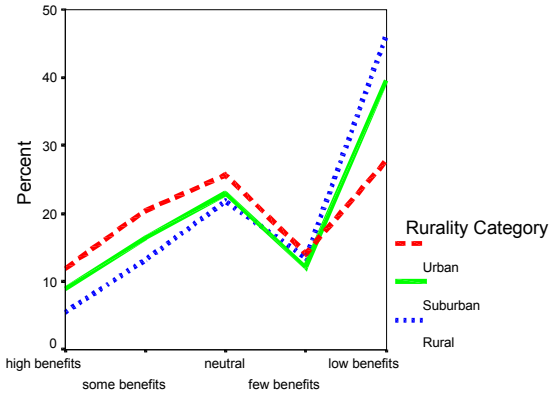
Rurality Category	High Benefits to Society	Some Benefits to Society	Neutral	Almost No Benefits to Society	Low Benefits to Society
Urban	12.9	16.4	27.7	15.4	27.7
Suburban	6.4	11.4	21.8	16.1	44.3
Rural	4.7	9.0	21.8	13.8	50.7



Protecting prairie dogs on private/public lands

Protecting prairie dogs on private lands owned by landowners who are willing to be compensated for their protection will have…

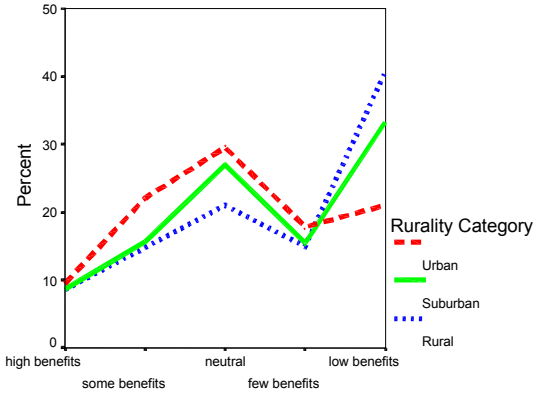
Rurality Category	High Benefits to Society	Some Benefits to Society	Neutral	Few Benefits to Society	Low Benefits to Society
Urban	11.9	20.4	25.7	14.2	27.7
Suburban	8.9	16.4	23.0	12.1	39.7
Rural	5.5	13.2	21.8	13.5	46.1



Protecting prairie dogs on private lands with compensation

Protecting prairie dogs only on public lands will have…

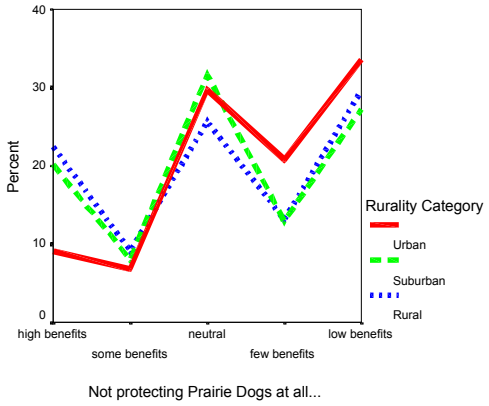
Rurality Category	High Benefits to Society	Some Benefits to Society	Neutral	Few Benefits to Society	Low Benefits to Society
Urban	9.5	22.1	29.6	17.8	21.1
Suburban	8.6	15.7	26.9	15.5	33.3
Rural	8.6	14.8	21.0	14.9	40.7



Protecting prairie dogs on public

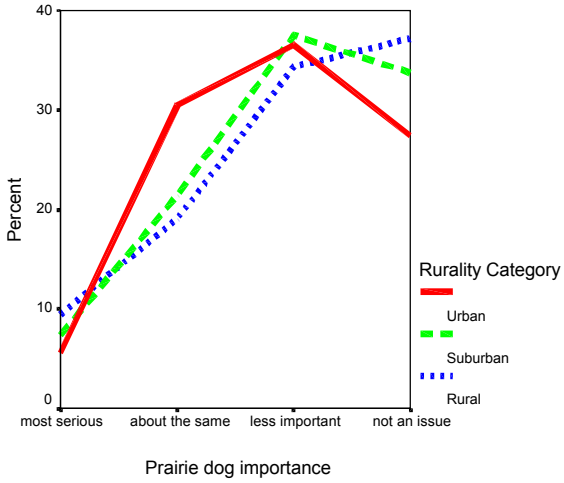
Not protecting prairie dogs will have…

Rurality Category	High Benefits to Society	Some Benefits to Society	Neutral	Few Benefits to Society	Low Benefits to Society
Urban	9.1	6.9	29.7	20.8	33.5
Suburban	20.2	8.0	31.6	13.0	27.2
Rural	22.4	9.1	25.7	13.1	29.6



1b. Recently, there has been a lot of talk about whether prairie dogs will become endangered in the coming years. Generally speaking, how important is deciding what to do about prairie dogs compared to other environmental problems in your state?

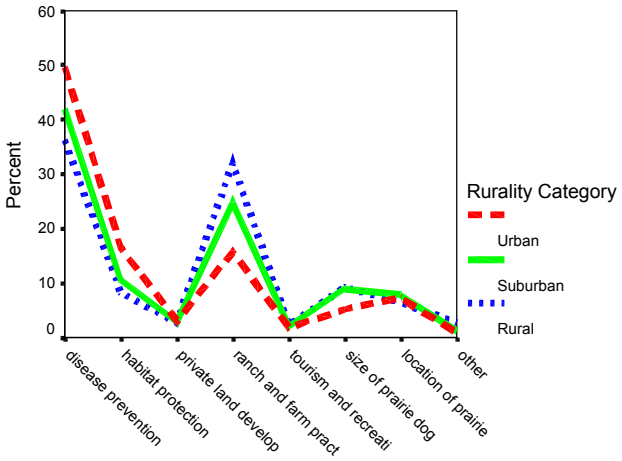
Rurality Category	One of the Most Serious Problems	About the same as any other issue	Less important than other issues	It is not an issue at all
Urban	5.6	30.5	36.6	27.4
Suburban	7.3	21.4	37.5	33.8
Rural	9.4	19.0	34.3	37.2



1c. Listed below are several issues that wildlife experts are confronted with when managing prairie dogs. Please indicate which issue you feel is the most important and which is the least important by putting numbers in the appropriate blanks.

Most Important issue

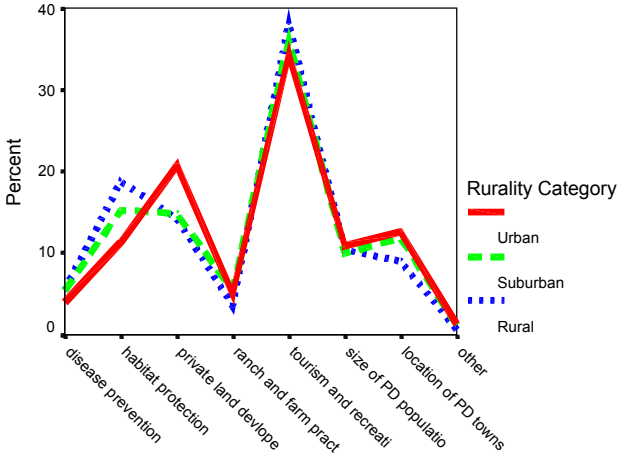
Rurality Category	Disease prevention	Habitat protection	Private land development	Ranch and farm practices	Tourism recreation opportunities	Size of prairie dog populations	Location of prairie dog towns	Other
Urban	49.7	16.5	3.1	15.7	1.9	5.2	7.2	.8
Suburban	41.9	10.5	2.8	24.8	2.0	9.0	7.8	1.2
Rural	36.3	8.3	2.7	32.1	2.3	9.2	6.5	2.7



Most important issue on prairie dog management

Least important issue

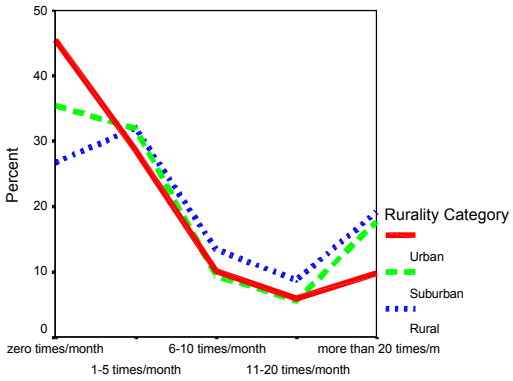
Rurality Category	Disease prevention	Habitat protection	Private land development	Ranch and farm practices	Tourism and recreation	Size of Prairie Dog populations	Location of Prairie Dog towns	Other
Urban	4.0	11.3	20.7	5.0	34.3	10.9	12.6	1.3
Suburban	5.4	15.2	14.9	5.4	36.0	10.0	11.8	1.2
Rural	5.4	18.8	14.3	3.6	38.0	10.4	9.0	.6



Least important issue on prairie dog management

2. In general, how often do you see prairie dogs?

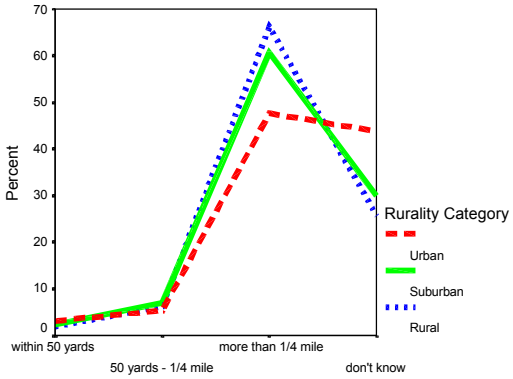
Rurality Category	Zero times/month	1-5 times/month	6-10 times/month	11-20 times/month	More than 20 times/month
Urban	45.5	28.7	10.2	5.9	9.8
Suburban	35.4	31.9	9.4	5.5	17.7
Rural	26.7	32.0	13.4	8.7	19.1



How often do you see prairie dogs

3. Which best describes how far your primary residence is from a prairie dog town?

Rurality Category	Within 50 yards	50 yards - 1/4 mile	More than 1/4 mile	Don't know
Urban	3.2	5.4	47.6	43.8
Suburban	2.4	7.0	60.5	30.0
Rural	1.9	6.2	66.2	25.7

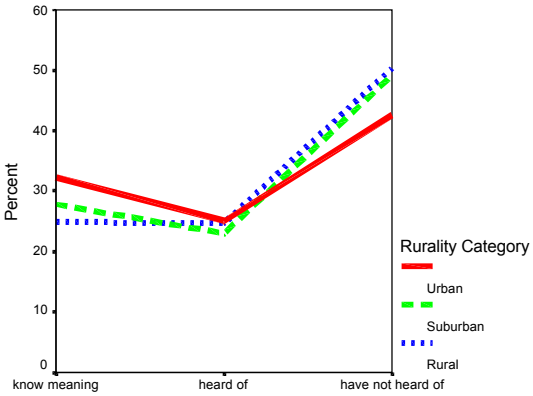


Distance from home to prairie dog town

5. Below is a list of specific terms that managers commonly use when they discuss management of prairie dogs. We are asking if you know the meaning of each term, have heard of the term but do not know its meaning, or have not heard of the term at all.

Random Demographic Events

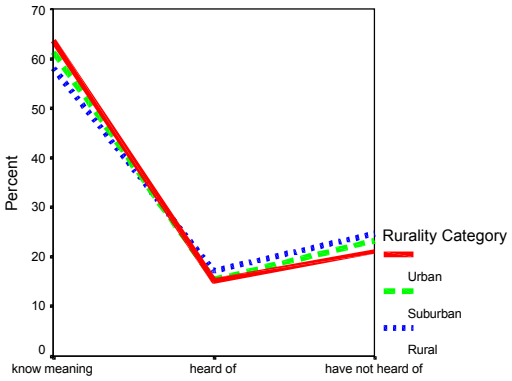
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	32.3	25.1	42.6
Suburban	27.8	23.0	49.2
Rural	24.9	24.7	50.4



Meaning of Random Demographic Events

Prairie Ecosystem

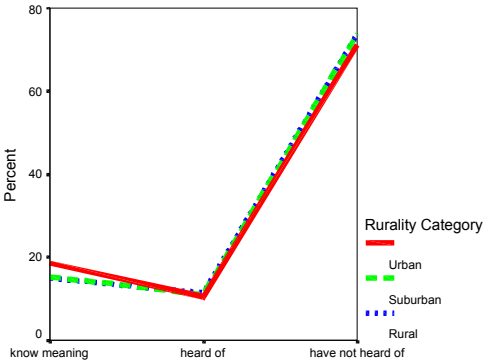
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	63.7	15.2	21.1
Suburban	61.3	15.4	23.3
Rural	58.1	17.2	24.7



Meaning of Prairie Ecosystem

Diurnal

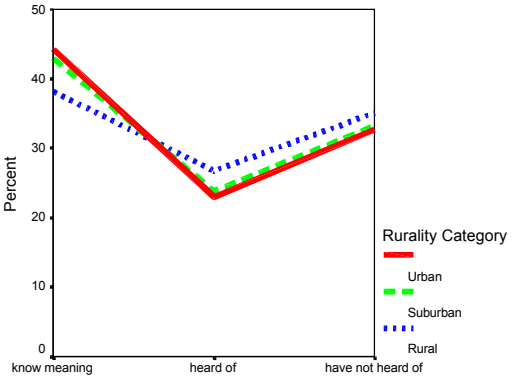
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	18.5	10.4	71.1
Suburban	15.3	11.0	73.7
Rural	14.9	11.4	73.7



Meaning of Diurnal

Habitat Fragmentation

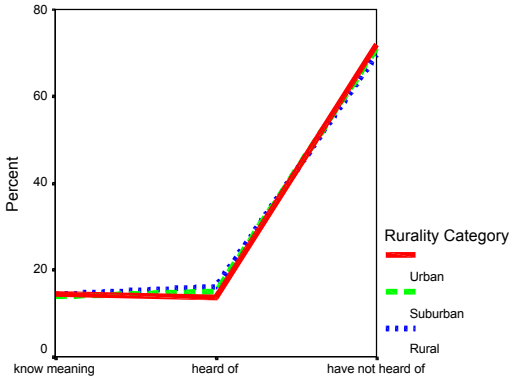
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	44.3	23.0	32.7
Suburban	43.0	23.8	33.2
Rural	38.2	26.8	35.1



Meaning of Habitat fragmentation

Extirpated

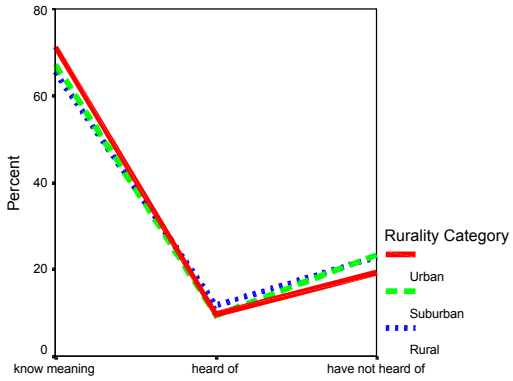
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	14.3	13.7	71.9
Suburban	13.9	15.0	71.1
Rural	14.3	16.1	69.6



Meaning of Extirpated

Urban Sprawl

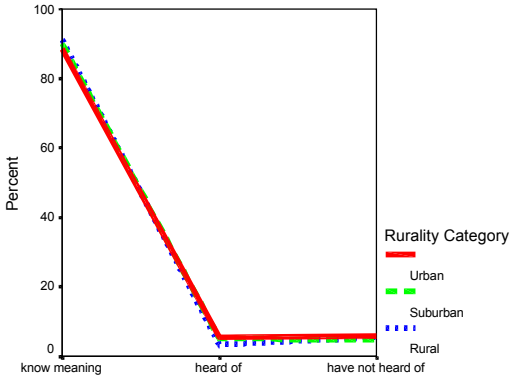
Rurality Category	Know meaning	Heard of but don't know meaning	Have not heard of
Urban	71.2	9.6	19.2
Suburban	67.3	9.4	23.3
Rural	65.5	11.7	22.9



Meaning of Urban Sprawl

Burrowing

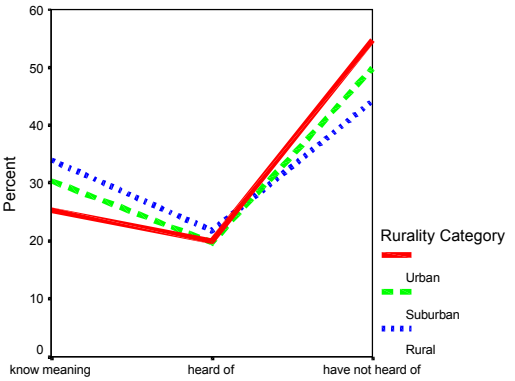
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	88.6	5.5	5.9
Suburban	90.2	5.1	4.8
Rural	91.2	3.3	5.5



Meaning of Burrowing

Sylvatic Plague

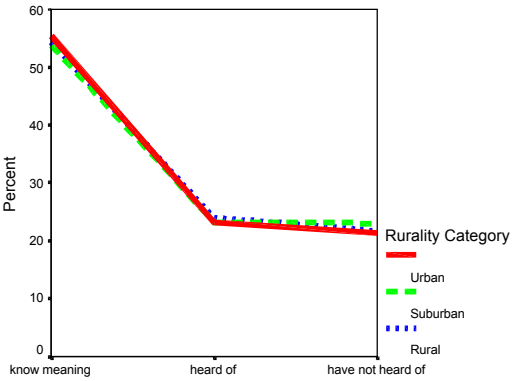
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	25.3	20.0	54.7
Suburban	30.4	19.7	49.8
Rural	34.0	21.8	44.2



Meaning of Sylvatic Plague

Habitat Conversion

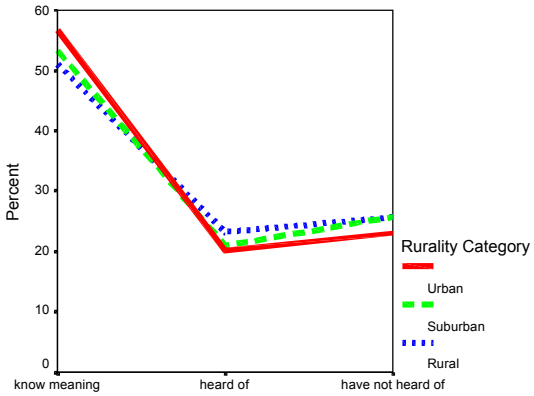
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	55.4	23.2	21.4
Suburban	53.8	23.2	23.0
Rural	54.3	24.0	21.7



Meaning of Habitat Conversion

Biological Vulnerability

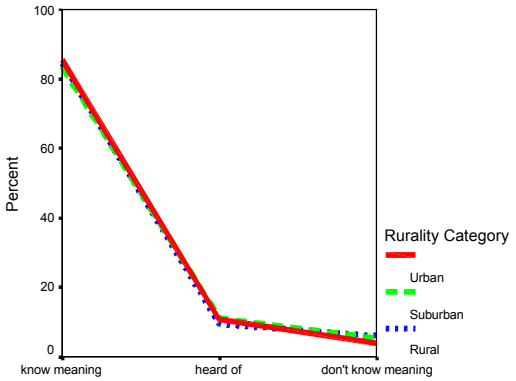
Rurality Category	Know meaning	Heard of, but don't know meaning	Have not heard of
Urban	56.8	20.2	23.0
Suburban	53.3	21.0	25.7
Rural	51.1	23.2	25.7



Meaning of Biological Vulnerability

Endangered Species Act

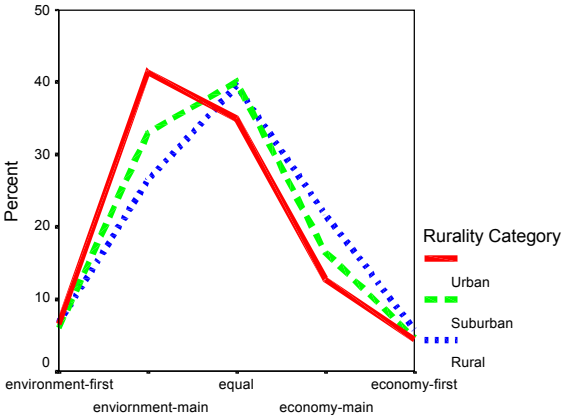
Rurality Category	Know meaning	Heard of, but don't know meaning	Don't know meaning
Urban	85.7	10.6	3.7
Suburban	83.5	11.1	5.4
Rural	84.6	9.3	6.0



Meaning of Endangered Species Act

6. Because preserving or developing prairie dog habitat is one element of environmental policy, it is important to know how you feel about this issue. Please mark the best option.

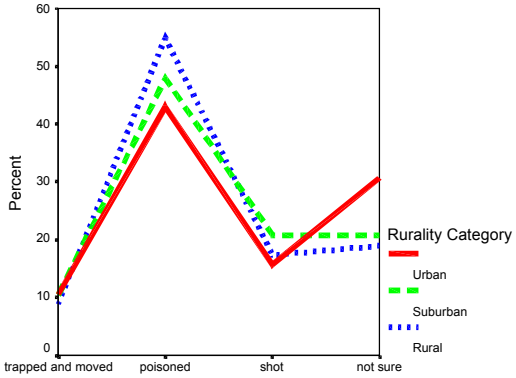
Rurality Category	Protection of environment in natural state is the only consideration	Environmental protection is the most important, but not only consideration	Protect-ion of environment and growth of economy have equal consideration	The growth of economy is the most important, but not the only consideration	Growth of economy is the only consideration
Urban	6.5	41.4	34.9	12.7	4.4
Suburban	5.9	32.9	40.0	16.5	4.6
Rural	6.6	26.4	39.5	21.7	5.8



Best option for Natural Resource Management

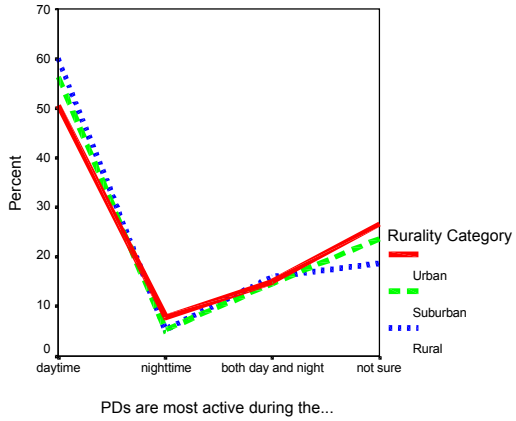
7a. Prairie Dogs that interfere most often with human activities are most often...[5]

Rurality Category	Trapped and moved	**Poisoned**	Shot	Not sure
Urban	10.6	**43.1**	15.7	30.7
Suburban	10.4	**47.9**	20.8	20.8
Rural	8.8	**54.9**	17.4	18.9



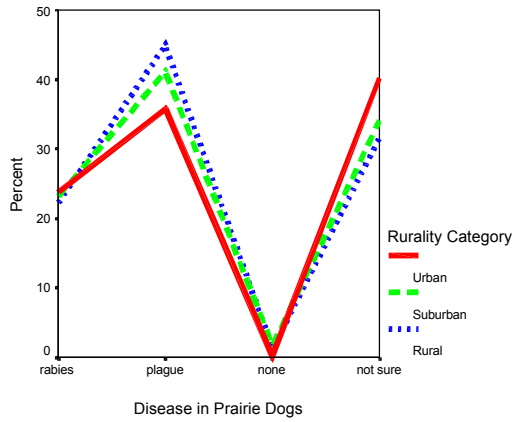
7b. Prairie Dogs are most active during the…

Rurality Category	**Daytime**	Nighttime	Both day and night	Not sure
Urban	**50.6**	7.8	15.0	26.6
Suburban	**56.3**	5.3	14.7	23.7
Rural	**59.9**	5.4	16.0	18.7



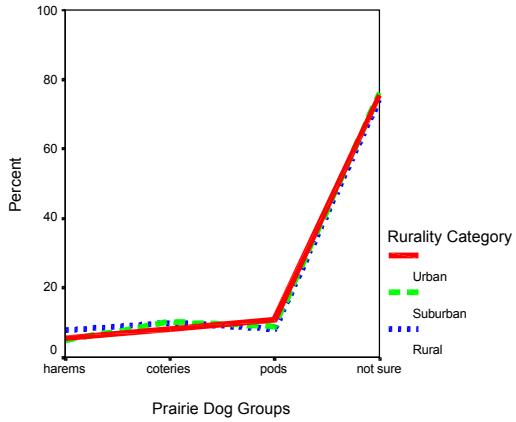
7c. A disease that can occur in prairie dogs…

Rurality Category	Rabies	**Plague**	None	Not sure
Urban	23.8	**35.7**	.2	40.3
Suburban	23.2	**41.1**	1.6	34.0
Rural	22.2	**44.9**	1.2	31.6



7d. Prairie Dogs live in groups called…

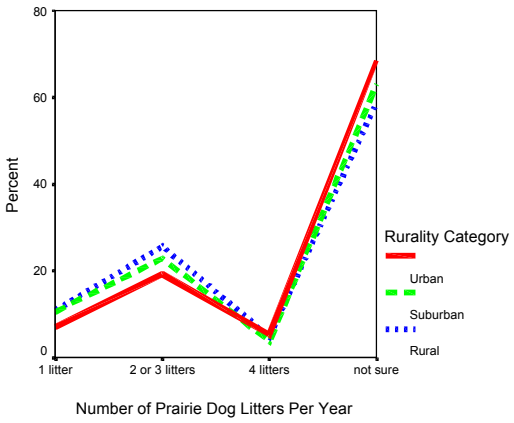
Rurality Category	Harems	**Coteries**	Pods	Not sure
Urban	5.6	**8.1**	10.7	75.6
Suburban	4.8	**10.2**	8.8	76.1
Rural	7.8	**9.9**	8.1	74.3



[5] All questions in #7 were multiple choice. The correct answer is highlighted in bold.

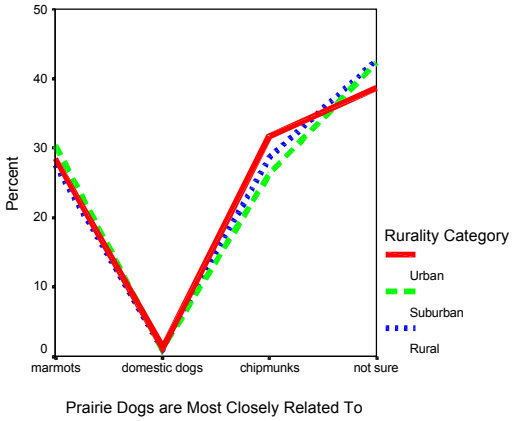
7e. How many litters of young do prairie dogs have each year?

Rurality Category	**1 litter**	2 or 3 litters	4 litters	Not sure
Urban	**7.1**	19.2	5.3	68.5
Suburban	**10.5**	22.8	3.7	62.9
Rural	**10.9**	25.6	4.8	58.8



7f. Prairie Dogs are most closely related to…

Rurality Category	Marmots	Domestic dogs	**Chipmunks**	Not sure
Urban	28.5	1.2	**31.7**	38.6
Suburban	30.4	1.0	**26.3**	42.3
Rural	27.6	1.1	**28.7**	42.7



Glossary of Terms

Biological vulnerability: increased likelihood of population decline due to such factors as habitat loss and/or disease.

Black-footed ferret: Scientific name is *Mustela nigripes.* This endangered species lives almost entirely in prairie dog towns and prairie dogs are its principal prey.

Black-tailed prairie dogs: Scientific name is*Cynomys ludovicianus*. They live in the short-grass prairie region of the central United States.

Burrowing: Living or hiding in a hole or tunnel

Diurnal: Active during the daytime rather than at night.

Endangered Species Act: The ultimate goal is to maintain the natural diversity of plants and animals and the ecosystems upon which they depend. Plants and all classes of invertebrates are eligible for protection. The Act authorizes agencies to acquire land for listed animals and plants. All Federal agencies are required to undertake programs for the conservation of endangered and threatened species, and are prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its "critical habitat".

Extirpated: Destroyed totally or exterminated.

Ferruginous hawk: Scientific name is *Bueto regalis.* This bird of prey feeds on prairie dogs.

Habitat conversion: Prime prairie dog habitat and other prairie ecosystems are being converted for urban development. This is apparent along the Front Range in Colorado.

Habitat fragmentation: The result of habitat conversion, which leaves small pockets of open areas, thus fragmenting the entire landscape.

Prairie ecosystem: Suite of species and processes occurring in the central portion of the United States and Canada (the Great Plains) represented by mid-grass, short-grass, and tall-grass prairie vegetation.

Random demographic events: Events that may cause a drastic change in the numbers of a species; for example, Sylvatic plague or increased predation.

Sylvatic Plague: Scientific name is *Yersinia pestis*. A disease that was accidentally introduced from Asia into the North American prairie ecosystem. A plague outbreak in a black-tailed prairie dog colony results in nearly 100% mortality.

Urban sprawl: The unplanned, uncontrolled spreading of urban development into areas adjoining the edge of a city.

References

Barnes, Allan M. 1993. "A review of Plague and Its Relevance to Prairie dog Populations and the Black-footed Ferret." Pages 28-37 in John T. Oldemeyer, Dean E. Biggins, Brian J. Miller, and Ronald Crete (editors) Management of Prairie Dog Complexes for Reintroduction of the Black-footed Ferret. Biological Report 13. Washington, DC: U.S. Fish and Wildlife Service.

Dillman, Don A. 1978. Mail and Telephone Surveys: The Total Design Method. John Wiley and Sons: New York.

Dillman, Don A. 2000. Mail and Internet Surveys: The Tailored Design Method, 2nd Edition. John Wiley and Sons: New York.

Dolan, Coby C. 1999. *The National Grasslands and Disappearing Biodiversity: Can the Prairie Dog Save Us from an Ecological Desert?* Environmental Law 29: 213-234.

Dunlap, T.R. 1988. Saving America's Wildlife. Princeton NJ: Princeton University Press.

Graber, Kimberly and Thomas France. 1998. "Petition for Rule Listing the Black-Tailed Prairie Dog) as Threatened throughout its Range." National Wildlife Federation, petitioner to the U.S. Fish and Wildlife Service.

Kellert, Stephen. R. 1985. *Social and Perceptual Factors in Endangered Species Management.* Journal of Wildlife Management 49(2): 528-536.

Knopf, F.L. 1993. *Avian Assemblages on Altered Grasslands*. Studies in Avian Biology 15: 247-257.

Kotliar, Natasha B., Bruce W. Baker, April D. Whicker, and Glenn Plumb. 1999. *A Critical Review of Assumptions About the Prairie Dog as a Keystone Species*. Environmental Management 24(2):177-192.

Miller, B. J., R .P. Reading, and S. Forest. 1996. Prairie Night: Black-Footed Ferrets and the Recovery of Endangered Species. Washington, D.C.: Smithsonian Press.

Reading, Richard P., Brian J. Miller and Stephen R. Kellert. 1999. *Values and Attitudes Toward Prairie Dogs*. Anthrozos 12(1):43-52.

U.S. Forest Service. 1978. "Management of Prairie Dogs on Lands Administered by the Supervisor of the Nebraska National Forest." In Lawrence Sutton (ed.) Prairie Dog Management. USDA Forest Service Environmental Statement (USDA-FS-R2-FES).

Utah Division of Wildlife Resources and U.S. Fish and Wildlife Service, Region 6. 1991. "Utah Prairie Dog Recovery Plan." Salt Lake City, Utah and Denver, Colorado.

Van Liere, K., and R. Dunlap. 1980. *The social bases of environmental concern: a review of hypotheses, explanations and empirical evidence.* Public Opinion Quarterly 44:181-197.

Van Liere, K., and R. Dunlap. 1981. *Environmental Concern: Does it Make a Difference How it is Measured?* Environment and Behavior 13:651-684.

Zinn, Harry and William Andelt. 2000. *Attitudes of Fort Collins, Colorado Residents Toward Prairie Dogs.* Wildlife Society Bulletin. 27(4): 1098-1106.