

**Thoughts, attitudes, and beliefs on the Rosebud Sioux Reservation regarding *Pispiza*
(black-tailed prairie dog, *Cynomys ludovicianus*)**

by

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DEDICATION

For my daughters Laura Tiane, Elizabeth Sarah Jean, and Mariah Marie

Whoo-hoo! It's taken 8 long years but you finally got your ol' mom through 2 degrees and a thesis! I know how hard it was always hearing "not now, I have to study/write," and always being drug off to another conferences or "remote" internship. But we also had some amazing adventures along the way- moose babies in the backyard, catching salmon (hang on Elizabeth!), and the 4th of July celebration in Alaska; catching lizards, finding arrow heads and pottery shards, and eating mutton soup and roasting ears (how many Mariah?) in New Mexico; and riding horse (Laura the trick rider), camping by the river, and catching *Pispiza* in South Dakota, just to name a few.

I hope you will always remember both the hard work and the fun times with a smile and that they will keep you inspired during your own educational quests. I could never have completed mine without the three of you. Love, Mom.

And for the apple of Grandma's eye

Tristan Christopher Mart,

who provided excellent thesis writing distractions

In memory of
J.E.B

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TABLE OF CONTENTS

LIST OF FIGURES	vii
LIST OF TABLES	viii
ABSTRACT	ix
CHAPTER 1. GENERAL INTRODUCTION	1
Introduction	1
Thesis Organization	3
Literature Review	4
References	7
CHAPTER 2. THOUGHTS, ATTITUDES, AND BELIEFS ON THE ROSEBUD SIOUX RESERVATION REGARDING <i>PISPIZA</i> (BLACK-TAILED PRAIRIE DOG, <i>Cynomys ludovicianus</i>)	10
Abstract	10
Introduction	10
Methods	19
Results	33
Discussion	38
References	42
CHAPTER 3. GENERAL CONCLUSIONS	50
Conclusion	50
Recommendations for Future Research	50
References	51
APPENDIX A. PROJECT QUESTIONNAIRE	52
APPENDIX B. PROJECT INFORMATION POSTER	61
APPENDIX C. PARTICIPANT DEMOGRAPHIC FREQUENCY GRAPHS	61
APPENDIX D. SINTE GLESKA UNIVERSITY REVIEW BOARD PROJECT APPROVAL LETTER	67
APPENDIX E. ROSEBUD SIOUX TRIBE PRAIRIE MANAGEMENT PROGRAM PROJECT SUPPORT LETTER	69
APPENDIX F. ROSEBUD SIOUX TRIBE GAME, FISH, & PARKS PROJECT SUPPORT LETTER	71

APPENDIX G. SINTE GLESKA UNIVERSITY RANCH PROJECT SUPPORT LETTER	73
APPENDIX H. IOWA STATE UNIVERSITY INTERNAL REVIEW BOARD RESEARCH APPROVAL LETTER	75
APPENDIX I. IOWA STATE UNIVERSITY NATURAL RESOURCE GEOLOGY MANAGEMENT DEPARTMENT LETTER	78
APPENDIX J. PARTICIPANT CONSENT FORMS FOR GENERAL COMMUNITY MEMBER, ELDER, AND STUDENT	80

LIST OF FIGURES

Figure 1.	Estimated occupied prairie dog habitat on Tribal lands 2002	18
Figure 2.	Map of South Dakota indicating Rosebud Sioux Reservation and Rosebud Sioux Tribe Service Unit	21
Figure 3.	Map of Rosebud Sioux Tribe Service Unit showing community locations	22

LIST OF TABLES

Table 1. County and state demographics for 2004 (by percent) and population for 2005, for counties in the Rosebud Service Unit and for the State of South Dakota	22
Table 2. Number of households to be sampled per community	26
Table 3. Number of Tribal housing units and rural residences within the Rosebud Sioux Tribe Service Unit by community and number to be sampled per community	27
Table 4. Definition of questions/items used in component analysis	31
Table 5. Definition of predictor variables	32
Table 6. Breakdown of demographics by number for participant groups	34
Table 7. Mean standard deviation, factor loadings and extracted communalities for questions/items retained by factor analysis	36
Table 8. Significant variable results and associated affects to general community member respect management, and mainstream scientific knowledge scores	37
Table 9. Significant variable results and associated affects to combined community member, Elder, and student respect; management; and mainstream biological knowledge	38

ABSTRACT

Wildlife management decisions must be made with an understanding of the species and its relationship to stakeholders. However, relationships between Native American stakeholders and *Pispiza*, black-tailed prairie dogs, have not been examined even though the majority of prairie dog occupied habitat exists on Tribal lands. I addressed this gap in the literature by examining *Pispiza*-related attitudes, beliefs, and knowledge on the Rosebud Sioux Reservation.

A total of 109 high school students, culturally knowledgeable community members, and randomly selected general community members completed questionnaires administered interview style. Factor analysis and stepwise regressions explored potential relationships between stakeholder groups and attitudes and knowledge. Factors with significant effects included cultural differences and ranching experience. The evidence of such relationships, in addition to social justice, demands macro-level investigations and explanations in future research. Additionally, Tribes must not be excluded from *Pispiza* conservation and management decisions nor left shouldering the majority of the conservation “burden.”

CHAPTER I. GENERAL INTRODUCTION

Introduction

Lakota oral tradition and wisdom teaches that everything in the natural world has a place and a purpose in the circle of life. According to Albert White Hat, Sr., Sicangu Lakota Elder and instructor of Lakota Studies at Sinte Gleska University on the Rosebud Sioux Reservation, the English word “animal” does not translate into the Lakota language. Lakota use the word “*Oyate*,” nation, just like when referring to humans.

Traditionally, the *Pispiza* (black-tailed prairie dog, *Cynomys ludovicianus*) *Oyate* was thought of as a relative and was respected and honored for its knowledge of plants and medicine. In pre-and early reservation days many Lakota holy men had *Pispiza* spirits as their helpers/advisors. *Pispiza* were also known as healers of the land.

Before ranching and farming altered the face of the prairie, *Pispiza*, *Tatanka* (bison, *Bos bison*), and *Itopta Sapa* (black-footed ferret, *Mustela nigripes*) enjoyed a symbiotic relationship. *Tatanka* migrated across the plains, fertilizing the prairie and clipping the grass short, enabling *Pispiza* to see approaching enemies and to establish colonies. *Pispiza* aerated and tilled the soil compacted by *Tatanka*, working the land to keep it in a replenished state. *Itopta Sapa* lived in *Pispiza* tunnels and ate *Pispiza*, keeping their population in balance, which in turn ensured a diversity of plants for *Tatanka* to graze upon. With this relationship the circle was complete and the prairie was healthy.

Itopta Sapa are now considered to be among the world’s most endangered species and *Tatanka* have since been largely replaced with cattle, which have different grazing patterns that include congregating in an area instead of migrating (Plumb & Dodd, 1993). In

meeting the nutritional needs of cattle, both through grazing and haying, the perfect *Pispiza* habitat is created: short grasses that allow *Pispiza* to see everything that goes on around him. The combination of perfect habitat and a decrease in predators, like black-footed ferrets, has allowed *Pispiza* populations to explode in some areas while in other areas they are nearing extinction due to systematic extermination by humans.

Although traditional Lakota philosophy holds high regard for *Pispiza*, not every person of Lakota heritage feels the same way. Among them are Scott Cuny, a rancher and Oglala Lakota Tribal member, who considers prairie dogs to be “just a rat, that’s all they are” (Shrouse, 2004). He’s not alone. Many agriculture producers, both Lakota and non-Lakota, can readily cite studies and stories that back up their beliefs that prairie dogs are an economic threat; are the cause of rangeland overgrazing; pose competition for forage, and that prairie dog burrows threaten the health and wellbeing of livestock and horses (Collins, Workman, & Uresk, 1984; Lybecker, Lamb, & Ponds, 2002; Reading, Clark, McCain, & Miller, 2002; Stoltenberg, Johnson, Smart, & Xu, 2004).

According to Mike Fox, past director of the Native American Fish and Wildlife Society centered in Denver, Colorado, the main reason that so many prairie dog towns survived on Tribal lands is due to federal neglect of the Tribes, rather than Native American religious or social values. “When the government came out in the 1930’s and 1940’s to poison the prairie dog they didn’t provide enough funding to eradicate them on Tribal lands. Now, the Tribes are carrying a lot of the burden for managing prairie dogs (Indian Country Today, 2001).

However, many scientists and environmentalists have come to agree with the Lakota wisdom that sees *Pispiza* as having a positive effect upon the condition of the prairie, as well

as large ungulates preferring to graze within their colonies (Wuerthner, 1995; Kotliar, Baker, Whicker, & Plumb, 1999; Miller & Cully, 2001; Reading et al., 2002; Lamb & Cline, 2003). There is also evidence that *Pispiza* are a keystone species with a minimum of 10 other species relying upon it for food and/or shelter, including the federally endangered black-footed ferret (Wuerthner, 1995; Kotliar et al., 1999; Miller & Cully, 2001; Reading et al., 2002; Lamb & Cline, 2003). Yet, some scientists, such as Vermeire, Heitschmidt, Johnson, and Sowell (2004), question the degree of *Pispiza*'s ecological importance.

So which is it? Are prairie dogs “destructive range rats” or “healers of the land”? Should they be managed against or managed for? Management decisions regarding any species, especially one as controversial as *Pispiza*, need to be made with an understanding of the species and its relationship with stakeholders (Sexton, Brinson, Ponds, Cline, & Lamb, 2001). But what exactly are the various *Pispiza*/stakeholder relationships and just as importantly, is it possible to predict them?

Thesis Organization

This thesis explores attitudes, beliefs, and knowledge on the Rosebud Sioux Reservation related to *Pispiza*, black-tailed prairie dog. Thesis organization includes a general introduction chapter with introduction, thesis organization, literature review and reference sections. Chapter 2 presents the paper “Thoughts, attitudes, and beliefs on the Rosebud Sioux Reservation regarding *Pispiza* (black-tailed prairie dog, *Cynomys ludovicianus*).” Chapter format follows journal of *Human Dimensions of Wildlife* contributor submission guidelines and contains abstract, introduction, methods, results, and discussion sections. The final chapter presents general discussion, recommendations for future research, and reference sections.

Literature Review

Previous attitudinal studies related to wildlife have examined stakeholder demographics, including education, age, gender, income, proximity to the species of concern, profession, and even how often they go horseback riding, as predictors of attitudes (Bjerke, Reitan, & Kellert, 1998; Sexton et al., 2001; Lybecker et al., 2002; Ericsson & Heberlein, 2003; Lamb & Cline, 2003). Demographics such as distance to the nearest species occurrence; childhood and/or current living location, landowner vs. non-landowner, gender, age, and field of employment have been linked to knowledge and attitudes related to prairie dogs, mountain lions, black bears, white-tailed deer, wolves, and cougars, among others.

The distance between a respondent's residence and the nearest territory/colony of the species of interest has been significantly linked to both negative attitudes toward and higher knowledge levels related to wolves in Switzerland (Karlsson & Sjöström, 2007) and to prairie dogs in Fort Collins, Colorado (Zinn & Andelt, 1999). Compared to the general public, respondents living near a prairie dog colony were more negative towards prairie dogs, more in favor of the use of poison, and had more prairie dog related knowledge (Zinn & Andelt, 1999). In addition, respondents who had lived close to prairie dog colonies for more than 5 years were more likely to be comfortable with the prospect of the entire colony being removed from the area (Zinn & Andelt, 1999).

The density and population of the closest prairie dog colony has also been found to play a role in determining stakeholder knowledge and attitudes of prairie dogs. Kansas landowners living in counties with a high prairie dog population and/or high density areas had more prairie dog knowledge and more negative attitudes toward prairie dogs than landowners in low density/population areas (Fox-Parish, 2002). Yet black bear population

density did not affect management attitudes or levels of knowledge for Arkansas and Mississippi landowners (Bowman, Leopold, Vilella, Gill, & Jacobson, 2001).

In a range-wide study urban dwelling respondents were more protective of prairie dogs than rural respondents although they also had less factual prairie dog knowledge and were less likely to know the location of the nearest colony (Sexton et al., 2001).

Additionally, urban respondents knew more prairie dog-related biological terms than rural respondents, although rural respondents had more factual prairie dog knowledge. However, in a South Dakota study it was not where a stakeholder currently dwelled but where they were reared that affected their prairie dog related attitudes (Gigliotti, 2006).

Field of employment also appears to be linked to stakeholder attitudes toward wildlife. Employees of agriculture and natural resource industries tend to be less concerned about what happens to prairie dogs (Lamb, Cline, Brinson, Sexton, & Ponds, 2001) with agricultural employees having the most negative attitudes (Reading, Clark, McCain, & Miller, 2006). Ranchers were especially likely to have antagonistic feelings towards prairie dogs, to consider them pests, and less likely to care about them (Reading & Kellert, 1993). However, antidotal evidence shows that some ranchers are willing to learn to live with prairie dogs and have done so successfully (Aschwanden, 2001).

From these studies we know that there is a link between stakeholder demographics and their attitudes, beliefs, and knowledge as related to wildlife. We also know that traditional Lakota culture thinks highly of prairie dogs but that at least one contemporary Lakota Tribal member thinks very poorly of them. In the past, the federal government has paid out large amounts of money to poison prairie dogs on Tribal lands only to also pay large sums later to help protect prairie dogs on the same Tribal lands. In at least one case, both

poisoning and protecting were done with Tribal Council approval and/or at their request (Rosebud Sioux Tribe Prairie Management Program (RSTPMP), n. d. # 1).

However, Tribal Council approval does not always mean approval by the people that the council represents. So what exactly do contemporary Lakota Tribal members think about *Pispiza* and their management? With 75 percent of occupied *Pispiza* habitat located on Tribal lands (Proctor & Forrest, 2006), mostly on Lakota Tribal lands, specifically, knowing the thoughts, attitudes, and beliefs of Lakota stakeholders should provide valuable information for making *Pispiza* management decisions. However, a literary review did not reveal any studies that addressed the knowledge, experiences, or perception of the Lakota, or any other Tribe, as related to *Pispiza*.

I hypothesized that there would be factors on the Rosebud Sioux Reservation which can predict stakeholder beliefs, attitudes, and mainstream scientific knowledge related to *Pispiza*. Learning which factors predict attitudes and beliefs regarding *Pispiza* will allow Tribal land and wildlife managers to predict potential interactions between the various *Pispiza* management stakeholders, with the long range goal of such information being useful in the development of more ecosystem friendly black-tailed prairie dog management plans both on-and off-reservation. Furthermore, I expected that traditional Lakota stakeholders will have more respect for prairie dogs than non-Lakota stakeholders; that ranchers will have less respect but more mainstream scientific knowledge than non-ranchers; and that stakeholders living the closest distance to the nearest prairie dog colony will have more mainstream scientific knowledge of prairie dogs but less respect for them.

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CHAPTER 2. THOUGHTS, ATTITUDES, AND BELIEFS ON THE ROSEBUD SIOUX RESERVATION REGARDING *PISPIZA* (BLACK-TAILED PRAIRIE DOG, *Cynomys ludovicianus*)

A paper to be submitted to *Human Dimensions of Wildlife*

Jeanne Spaur

Abstract

Wildlife management decisions must be made with an understanding of the species and its relationship to stakeholders. However, relationships between Native American stakeholders and *Pispiza*, black-tailed prairie dogs, have not been examined even though the majority of prairie dog occupied habitat exists on Tribal lands. I addressed this gap in the literature by examining *Pispiza*-related attitudes, beliefs, and knowledge on the Rosebud Sioux Reservation. A total of 109 high school students, culturally knowledgeable community members, and randomly selected general community members completed questionnaires administered interview style. Factor analysis and stepwise regressions explored potential relationships between stakeholder groups and attitudes and knowledge. Factors with significant effects included cultural differences and ranching experience. The evidence of such relationships, in addition to social justice, demands macro-level investigations and explanations in future research. Additionally, Tribes must not be excluded from *Pispiza* conservation and management decisions nor left shouldering the majority of the conservation “burden.”

Keywords: Lakota, Native American, attitudes, prairie dogs, wildlife,

Introduction

Wildlife management and conservation decisions need to be made with an understanding of the species and its relationship to stakeholders. Stakeholder attitudes and

knowledge have been found to affect management and/or conservation efforts related to predators (Messmer, Brunson, Reiter, & Hewitt, 1999) including wolves (Karlsson & Sjöström, 2007), black-bears (Bowman, Leopold, Vilella, Gill, & Jacobson, 2001), and cougars (Teel, Krannich, & Schmidt, 2002); black-footed ferrets (Reading & Kellert, 1993); marine wildlife (Whitley, Wolch, & Salisch, 1998); and “pest” species such as birds (Jacobson, Sieving, Jones, & Van Doom, 2003), elephants (Hill, 1998), and black-tailed prairie dogs (Zinn & Andelt, 1999; Lybecker, Lamb, & Ponds, 2002; Reading, Stern, & McCain, 2006).

Black-tailed prairie dogs (*Cynomys ludovicianus*) are a keystone, but controversial, species upon which the health of the prairie depends (Kotliar, Baker, Whicker, & Plumb, 1999). Due to habitat loss, plague, and systematic poisoning and shooting programs their numbers have been reduced by as much as 98 percent over the last century (U. S. Fish & Wildlife Service (USFWS), 1999; USFWS 2000). In 2000, the USFWS placed the black-tailed prairie dog on the Endangered Species Act (ESA) Candidate List by issuing a “warranted but precluded” finding after being sued by conservation groups (USFWS, 2000). However, in 2004, the Service determined, under heavy political pressure, that prairie dogs were not in danger of extinction and removed them from the ESA candidate list (USFWS, 2004).

Many people who live within the range of black-tailed prairie dogs hold negative attitudes toward them (Sexton, Brinson, Ponds, Cline, & Lamb, 2001; Lybecker, Lamb, & Ponds, 2002; Gigliotti, 2006; Reading, et al., 2006). Previous attitudinal studies have examined stakeholder attitudes based upon demographics, including ranching and

landownership (Reading & Kellert, 1993; Fox-Parish, 2002), age (Lybecker et al., 2002; Gigliotti, 2006), and distance to the closest prairie dog colony (Zinn & Andelt, 1999).

Seventy-five percent of the remaining occupied prairie dog habitat is located on Tribal lands (Proctor, Haskins, & Forrest, 2006), due in large part to federal neglect of the Tribes during the government-sponsored poisoning programs of the 1930's and 40's (Indian Country Today, 2001). Yet a literature search did not reveal any studies that addressed Native American attitudes and knowledge related to prairie dogs.

Social justice demands that Tribes not be excluded from decisions regarding prairie dog conservation and management, as well as not being left shouldering the majority of the conservation "burden." The lack of knowledge regarding Native American prairie dog-related attitudes and beliefs could have serious ramifications for conservation efforts by complicating partnerships and working relationships among and between Tribal and non-Tribal stakeholders.

The majority of Tribal prairie dog acres exist on Lakota (also referred to as Sioux) Tribal lands. Traditionally, the Lakota viewed the *Pispiza Oyate* (black-tailed prairie dog nation) as a relative and respected and honored it for its knowledge of plants and medicine. In pre- and early reservation days many Lakota holy men had *Pispiza* spirits as their helpers/advisors (A. White Hat, personal communication, April 8, 2005).

With the creation of the reservation system Lakota culture, like other Native American cultures, changed to reflect the new situation. This resulted in a diversity of occupations and living situations, and likely a diversity of current Lakota attitudes related to *Pispiza*, some of which may be similar to those held by non-Native Americans with similar demographics.

I hypothesized that there would be factors on the Rosebud Sioux Reservation which can predict stakeholder beliefs, attitudes, and mainstream scientific knowledge related to *Pispiza*. Learning which factors predict attitudes and beliefs regarding *Pispiza* may allow Tribal land and wildlife managers to predict potential interactions between the various *Pispiza* management stakeholders, with the long range goal of such information being useful in the development of more ecosystem friendly black-tailed prairie dog management plans both on-and off-reservation. Furthermore, I expected that traditional Lakota stakeholders would have more respect for prairie dogs than non-Lakota stakeholders, that ranchers/farmers would have less respect but more mainstream scientific knowledge than non-ranchers/farmers, and that those stakeholders living the closest to a prairie dog colony will have more mainstream scientific knowledge of prairie dogs but less respect for them.

History of prairie dog management

The relationship between *Pispiza* and humans has not always been controversial. Prior to the altering of the native prairie by ranching and farming, the prairie dog was considered an important part of the prairie ecosystem and lived in harmony with humans. According to an account by Oglala Lakota Chief Luther Standing Bear (1933):

Prairie dogs were known as ‘little farmers,’ for they cleared the ground about their dwelling places and soon after there began to grow a plant upon which they lived. Whether they had a system of planting or not we never found out, but it was noticeable that wherever these little animals took up their abode their food plants soon took the place of weeds. Neither did we ever see a prairie-dog ‘town’ in the process of changing location though it was done quiet often...The deserted towns of the prairie-dog seemed to be re-fertilized, no doubt on account of the air and water that got into the soil, for they soon were covered with a grass that afforded an excellent feed for our stock. (page 158-159).

The culture and tradition of the Lakota states that *Pispiza* was considered a relative. As a good relative, it shared its life with the Lakota people by giving itself as food, providing

medicine, and coming into ceremonies as a helper (Standing Bear, 1933). Additionally, examination of the pre-1900 record of Lakota environmental history does not find the magnitude of the prairie dog overpopulation that many areas of the Plains are experiencing today (Valandra, 1993).

Perception of the prairie dog as a range and agricultural pest began after the arrival of European settlers. The combination of drought and over grazing of cattle in the late 1800's produced ideal conditions for prairie dog expansion, which the population did. The Bureau of Biological Survey in 1902 declared that "the comings of the white man...favors [prairie dogs'] multiplication in two ways-by increasing the food supply and by decreasing the animal's natural enemies" (Merriam, 1902). Believing that sound management practices required the elimination of prairie dogs at all costs, farmers and ranchers started extensive poisoning programs around 1880, even though the cost of poisoning often outweighed the benefits (Roemer & Forrest, 1996).

The historic range of the prairie dog is estimated to have encompassed between 31 million has (Vermeire et al., 2004) and 100 million has (Miller, Ceballos, & Reading, 1994). All or parts of Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming fall within this historical range. It is estimated that within this range, at any one time, that the actual prairie dog colonies themselves may have covered up to 40 million has (Luce, 2002) with population estimates possibly as high as five billion (Seton, 1929; Costello, 1970). By the turn of the 20th century less than half of the original estimated 100 million has of prairie dog range remained inhabited (Nelson, 1919; Anderson, Forrest, Clark, & Richardson, 1986).

Federal government-subsidized poisoning began in 1915 and poisoning of prairie dogs quickly became the common practice for county, state, Tribal, and federal governments (Sexton et al., 2001). From 1916 to 1920, 13 million ha of prairie dogs were poisoned under federal programs (Bell, 1921). By 1960 it was estimated that occupied prairie dog habitat amounted to 607,000 ha throughout their range (Summers & Linder, 1978), which was reduced to 566,000 ha by 1971 (Cain, Workman, & Uresk, 1972). However, on the Rosebud Sioux Reservation numbers increased, from 22,000 acres of prairie dogs in 1960 to 44,000 acres by 1982 (RSTPMP, n. d. # 2)

In the 1970s the Rosebud Sioux Tribal Council met with stakeholders ranging from the Bureau of Indian Affairs (BIA) to traditional Lakota people to discuss the BIA's plan to control prairie dog "infestations" with poison. The Lakota people addressed both the BIA and Lakota officials, saying that the "infestation" was not the "problem in itself, but is a symptom of a problem," which was a lack of relationships. Valandra (1993) shares the address:

The Prairie Dog People are our relatives. For hundreds of years they have been good to us. Like good relatives they have shared their very lives with us so that we may live. They have given themselves as food to us. They come into our ceremonies...to help...us. But they have withdrawn from us. Not too long ago (1940's) we made war on them by poisoning them. They have been suspicious of us ever since even though we stopped the poisoning. The Prairie Dog People want to live as good relatives with us once again. They want to be food for us. They want to come back into our.... ceremonies. (page 3)

Having explained the problem, the People then offered a solution:

It was pointed out that prairie dog infestation is a result of overgrazing... The Council was told that if the Tribe would stop treating the Grass People badly by allowing over-grazing, then in ceremonies we could talk to the Prairie Dog People and ask them to spread out and not be concentrated in any one area. They would listen. They want to be in a good relationship with us. (page 3)

In 1980 the American Farm Bureau filed suit against the BIA for failure to control prairie dogs on the Pine Ridge Sioux Reservation in South Dakota. In response, the BIA conducted one of the largest and most expensive prairie dog poisoning efforts in history on the Pine Ridge Reservation between 1980 and 1984. Congress appropriated about \$6.2 million to poison 185,600 ha of prairie dogs (Miller, Wemmer, Biggins, & Reading, 1990) at a cost of about \$3.00/prairie dog killed (Sharps, 1988). An additional 97,100 ha were retreated from 1985-1986 (Hanson, 1988).

In 1991, Congress appropriated \$256,000 for poisoning prairie dogs on the Cheyenne River and Rosebud Sioux Indian Reservations in South Dakota, (US BIA, 1991). A finding by the USFWS that such a program would hurt the federally endangered black-footed ferret, along with potential legal proceedings from the Defenders of Wildlife, brought an end to the effort (US BIA, 1992b).

In response, the Cheyenne River and Rosebud Sioux Tribes initiated interdisciplinary teams to develop prairie dog management alternatives. The Cheyenne River Sioux also investigated the feasibility of undertaking black-footed ferret reintroductions, but the Rosebud Sioux did not (RSTPMP, n.d. #2).

Beginning in 1991 the Cheyenne River Sioux spent 14 years successfully developing and implementing a multimillion-dollar prairie management plan and program. Based on Lakota cultural traditions and improved range management techniques, the plan called for the restoration of the prairie ecosystem, including the reintroduction of black-footed ferrets, and the coexistence of prairie dogs and other wildlife species with livestock (US BIA, 1992a).

In 1998 the US Fish and Wildlife Service was sued by the National Wildlife Federation and Predator Conservation Alliance, Biodiversity Legal Foundation, and Jon

Sharps to list the black-tailed prairie dog as a threatened species under the ESA. Wanting to avoid the listing of prairie dogs as an endangered species, and the resulting habitat designations and land use restrictions, the 11 states within its range formed the Interstate Black-tailed Prairie Dog Conservation Team. The state wildlife agency for each of the states except North Dakota and Colorado signed a Memorandum of Understanding agreeing to a multi-state management approach (Luce, 2002; Cooper & Gabriel, 2005).

Between 1999 and 2000, the Intertribal Prairie Ecosystem Restoration Consortium was formed through a partnership of the Northern Cheyenne, Crow, Gros Ventres and Assiniboine (Fort Belknap Reservation), Three Affiliated (Fort Berthold Reservation), Rosebud Sioux, Crow Creek Sioux, Lower Brule Sioux, and the Oglala Sioux (Rosebud Reservation) Tribes, to represent Tribal interests and to work with state and federal agencies on appropriate conservation strategies (RSTPMP, n. d. #2). Collectively, the Tribes have jurisdiction and management authority over 2.3 million has of land (Vosburgh, 2003). Each Tribe began work to develop an individual prairie dog conservation plan for occupied habitat on their Tribal trust land. Occupied Consortium prairie dog habitat was estimated in 2002 at more than 72,037 has (Vosburgh, 2003). The Rosebud and Pine Ridge Reservations had the most occupied acres, with approximately 45 percent each (Figure 1).

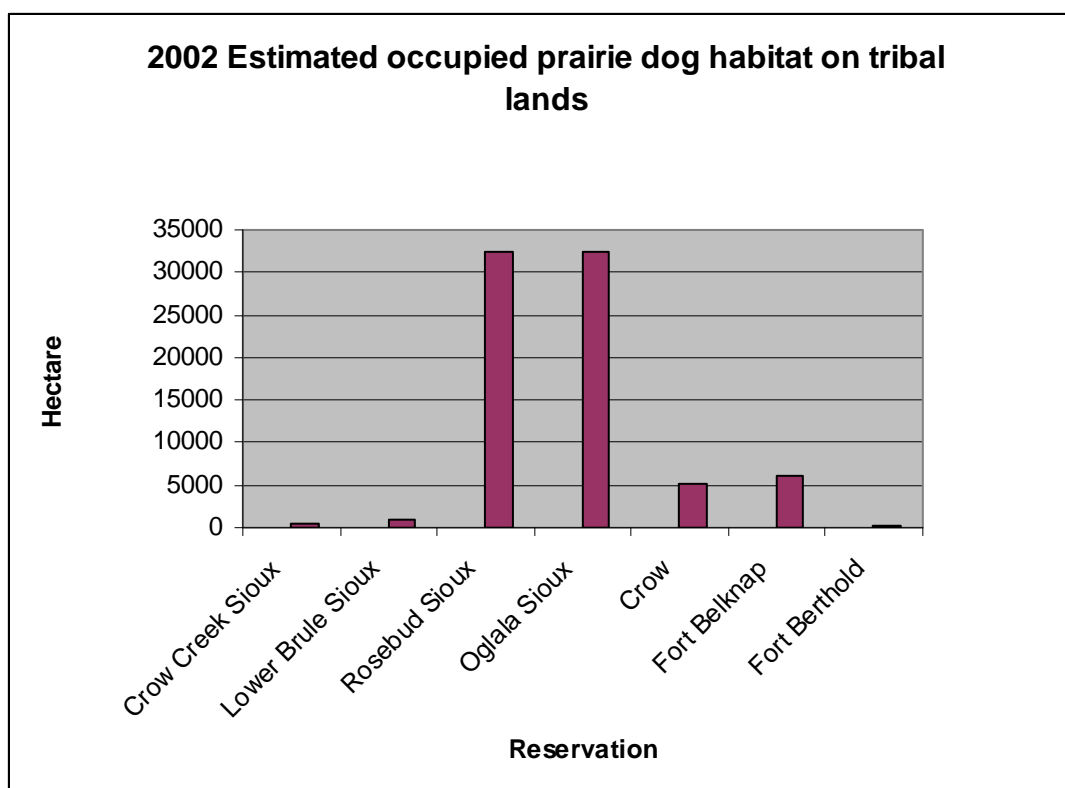


Figure 1. 2002 estimates of occupied prairie dog habitat for Intertribal Prairie Ecosystem Restoration Consortium member Tribes (Vosburgh 2003). Cheyenne River Reservation numbers are not included.

In 2000, the USFWS placed the black-tailed prairie dog on the ESA Candidate List by issuing a “warranted but precluded” finding (U.S. Fish and Wildlife Service, 2000). In 2001 the Rosebud Sioux began discussions with the USFWS to develop a prairie management program similar to that of the Cheyenne River Sioux. In 2003 Congress allocated \$500,000 for implementation of the Rosebud Sioux Prairie Management Plan, including black-footed ferret reintroduction. The Tribe soon reintroduced ferrets on about 4,046 ha (RSTPMP, n. d. #1). However, the Tribe also poisoned about 6,070 ha of prairie dogs as a trade-off negotiated with state and federal wildlife officials in exchange for helping the ferrets (Shrouse, 2004).

In August 2004, under heavy political pressure, the U. S. Fish and Wildlife Service determined that the black-tailed prairie dog was not in danger of extinction and removed it from the endangered species candidate list (USFWS, 2004). That same year, South Dakota Tribes requested that South Dakota's state conservation and management plan accommodate separate planning by the Tribes. Therefore, as 16.3 percent (1,981,940 ha) of the prairie dog range in South Dakota (12,155,704 ha) occurs on Tribal lands, only 16.3 percent of the total acreage goal can be assigned as "Tribal" prairie dog acreage (Cooper & Gabriel, 2005).

By 2005, prairie dogs inhabited 166,503 ha in South Dakota, less than 2 percent of their historic statewide range (Cooper and Gabriel, 2005). Proctor, Haskins, and Forrest (2006) examined the location of the 2 percent occupied habitat across the entire species range and determined that 75 percent of occupied habitat occurred on Tribal land, 17 percent occurred on federal, and only 0.04 percent occurred on private land. According to South Dakota Game, Fish, and Parks' 2007 prairie dog report, South Dakota's goal by 2011 is to have a total of 80,724 ha of occupied prairie dog habitat, with 67,566 ha (84 percent) to be on non-Tribal land (Kempema, 2006).

Methods

Study Area

The Sicangu Lakota reside on the Rosebud Sioux Reservation in South Dakota and are one of 7 Lakota sub-bands. The Lakota, along with the Dakota and Nakota, were misnamed Sioux by the French. Originally dwelling east of the Missouri River, Lakota bands most recently began crossing into the high plains region around 1776 (Douville, 2004). However, the Sicangu place the origins of the Lakota in the Black Hills of South Dakota around 1,616 BC. According to Victor Douville (2004), recognized expert in and Instructor

of Lakota Studies at Sinte Gleska University, this claim is substantiated by rock pecking of sacred and ceremonial events on canyon walls in the Black Hills region and by Lakota Star Knowledge (Goodman, 1992) based on the movement of the constellations synchronized with landforms in the Black Hills.

The Rosebud Sioux Reservation was established on March 2, 1889 when an act of the U.S. Congress split the Great Sioux Reservation, which encompassed most of present-day South Dakota west of the Missouri River, into six smaller reservations. This original RSR covered about 1,345,589 ha (3,324,987 ac/5,195 sq. miles) in south central South Dakota and included all of Todd and parts of Tripp, Mellette, Gregory, and Lyman counties (Douville, 2004). Homestead acts in 1904, 1906, and 1910 opened 609,431 ha of reservation lands within Gregory (156,178 ha), Tripp (259,002 ha), and Mellette (194,251 ha) counties to settlement (Biolsi, 2001). For state government purposes the reservation boundaries were reduced to those of Todd County by the 1978 Supreme Court decision Rosebud Sioux Tribal vs. Kneip (Biolsi, 2001). The state-acknowledged reservation boundaries include 357,109 has (1,379 sq. miles) (South Dakota State, 2004).

Within the RSR, cattle ranching and farming are the major economic occupations. The unemployment rate is 85 percent and the per capita personal income for Todd County in 1995 ranked 66th out of 66 counties in the state (Rosebud Sioux Tribal Resource & Economic Development, n. d.).

While the state-recognized boundaries of the RSR have changed, the Rosebud Sioux Tribe continues to offer services to enrolled Tribal members living within the original reservation borders. While RST requirement for enrollment used to include a minimum of 25 percent Sioux blood, as of August 2007 the only requirement is proof of lineal descent from

3 generations of enrolled Tribal members. As of 2003, there were 22,347 Tribal members and 10,000 non-Tribal members living within the Rosebud Service Unit (RSU), which includes Todd and portions of Gregory, Mellette, Lyman and Tripp counties (Figure. 2). RSU population is 50 percent female and 50 percent male. The median age is 20 years with 47 percent of the population under the age of 18 and 5.6 percent over the age of 65 (Two Eagles, 2003).

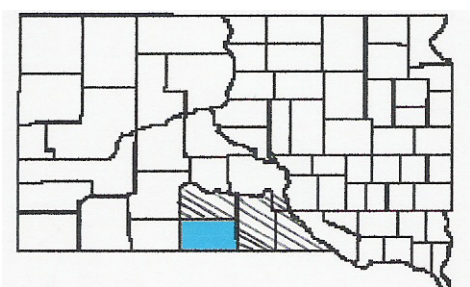


Figure 2. Map of South Dakota with state-recognized boundaries of the Rosebud Sioux Reservation shaded and additional areas within Rosebud Sioux Tribal Service Unit indicated with slash marks. One inch equals approximately 160 miles.

The RSU encompasses 20 distinct and individual communities, 7 of which are now outside the reservation boundary. The off-reservation communities cover a large land base with a small rural population and a Tribal member to non-Tribal member ratio that is much smaller than that of on-reservation communities (Table 1). Each of the 20 communities elects its own community chair or president. Community names and locations are shown in figure 3.

Table 1. County and state demographics for 2004 (by percent) and population for 2005, for counties in the Rosebud Service Unit and for the State of South Dakota.

County	Mellette	Gregory	Tripp	Todd	S. Dakota
2005 population	2,088.0	4,290.0	6,065.0	9,882.0	775,933.0
% < 18 yrs	33.1	20.3	24.7	42.4	24.8
% 65 yrs +	14.1	24.3	19.9	05.4	14.2
% female	50.2	51.0	50.7	50.8	50.3
% Native	54.2	5.9	11.2	82.7	08.6
% Caucasian	44.1	93.6	87.9	15.3	88.7
Miles ²	1,306.0	1,016.0	1,614.0	1,388.0	75,885.0
People/mile ²	1.6	4.7	4.0	6.5	9.9

Figures from U.S. Census Bureau (www.quickfacts.census.gov)

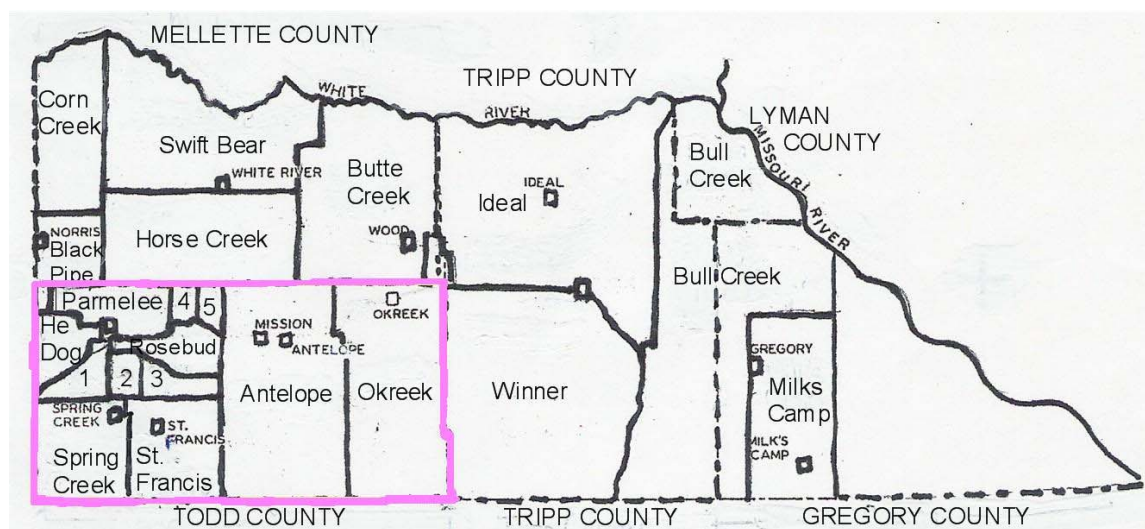


Figure 3. Map of Rosebud Service Unit showing location of communities. Rosebud Sioux Reservation boundaries are outlined in pink. Numbered communities are: 1 = Upper Cut Meat, 2 = Grass Mountain, 3 = Two Strike, 4 = Soldier Creek, 5 = Ring Thunder. Community boundaries are estimated. Ideal and Winner merge as one community and Bull Creek community spreads into Gregory, Lyman and Tripp counties. One inch equals approximately 22 miles.

Communities combine to form 13 districts. Each district is represented on Tribal Council with one representative per seven hundred and fifty members (South Dakota State, 2004), for a total of twenty council members. All reservation community members, both Tribal and non-Tribal, are represented at both community and district (Tribal Council) levels. Tribal enrollment is a requirement for voting and holding elected positions. Non-Tribal reservation community members are most likely to address their concerns to their district representative as opposed to being involved at a community level. Only Tribal members are included and represented in the reservation political system in off-reservation communities and districts.

Questionnaire

To identify the different levels of community thoughts, attitudes, and beliefs on the RSR regarding *Pispiza*, black-tailed prairie dog, I developed a three part questionnaire related to the cultural and ecosystem importance of *Pispiza* and to *Pispiza* population management, to mainstream biological science of *Pispiza*, and to participant demographics (Appendix 1). Questions were selected based upon discussions with Albert White Hat, Sr., instructor of Lakota Studies at Sinte Gleska University, Rosebud Sioux Tribe natural resource personnel, and prior attitudinal research (Reading and Kellert, 1993; Zinn and Andelt, 1999; Sexton et al, 2001; Fox-Parrish, 2002; Lybecker et al., 2002; Lamb and Cline, 2003; Gigliotti, 2006; Reading et al., 2006).

Section one consisted of 13 unnumbered statements related to *Pispiza* management and to the cultural and ecosystem importance of *Pispiza*. A five-point Likert format of response options was used for 12 of the statements. The final statement asked participants to select the one phrase out of five that best completed the statement.

Section two consisted of 9 unnumbered statements related to *Pispiza* mainstream biological science and *Pispiza* management. Participants were asked to select the one answer that best completed 7 statements related to mainstream scientific *Pispiza* ecology. Participants had the option of selecting “I don’t know.” Non-responses were included in the “I don’t know” category. One statement asked participants to select up to 5 phrases that they felt described *Pispiza*. The final statement gave participants the option of selecting from five answers, including “I don’t know,” or to write in their own idea of how to best manage reservation *Pispiza* populations.

The third section consisted of 10 unnumbered demographic statements. Participants were asked to self identify in respect to their amount of *Pispiza* experience/interaction, ranching experience, cultural background and level of traditionalism, age range, education level, usual job status, where they lived as a child, and where they currently lived. Classifications for gender, high school student, and Elder were not included in the questionnaire but were indicated and recorded. Having ranching experience was defined as previously or currently owning ranch/farm land and/or previously or currently working on a ranch/farm. “Usual job status” was removed mid-survey as being too invasive in an economically depressed area and is not included in this analysis.

The final section provided participants with opportunities to make additional comments on 1) changes in *Pispiza* behavior; 2) past views of *Pispiza*; and 3) any natural resource issue on the reservation. This section is not included in this analysis.

Participants

I interviewed students, culturally knowledgeable community members, and general community members within the RSU. Two sections of high school science classes taught by

the same teacher at the same RSR school were asked to complete the questionnaire. The students were sophomores and juniors and are identified as *students* in this study.

Culturally knowledgeable community members were identified by the Lakota community as being knowledgeable in the Lakota culture. Identification by the Lakota community was the only requirement for participation in this study as an Elder. For the purpose of this study such culturally knowledgeable community members are referred to as “Elders.”

Participating Elders ranged in age from 49 to 94 years and all but one were enrolled Tribal members. The non-Tribal member Elder was identified by Lakota community members as being culturally knowledgeable and had been a part of the community for over 20 years. Each community was given the opportunity to select at least one Elder to represent their community.

Participating non-Elder community members were over the age of 18 and are referred to as “community members” in this study. Shortage of housing on the reservation and the resulting plasticity of household membership made the most recent reservation census obsolete. Therefore, I selected community samples from individual households rather than from a total listing of individual community members.

The number of households to be sampled for each community was based upon that community’s number of Tribal Council representatives. Four households were randomly selected per Tribal Council representative per community. Larger communities that were also recognized as individual districts had from 4 to 16 households selected. Districts which consisted of combined smaller communities and shared a Tribal Council

representative, had 2 households selected each (Table 2). There was equal probability for compiled rural and non-rural households of being selected as a sample unit.

Table 2. Number of households to be sampled per community

District	Number of representatives	Number of residences to be sampled
Individual:		
Antelope	4	16
Parmelee	1	4
Rosebud	3	12
St. Francis	3	12
Swift Bear	1	4
Combined:		
Black Pipe/He Dog	1	2/2
Bull Creek/Milks Camp	1	2/2
Butte/Okreek	1	2/2
Corn Creek/Horse Creek	1	2/2
Grass Mountain/Upper Cut Meat	1	2/2
Ideal/Winner	1	2/2
Ring Thunder/Soldier Creek	1	2/2
Spring Creek/Two Strike	1	2/2
Total:	20	80

Rural residences were defined as those not located within limits of a town or RST housing areas. Non-rural residences were defined as residences located within limits of a town or in RST housing areas. In order to be eligible for selection, households and their representative participant must have Tribal Council representation.

I compensated in various ways for the lack of a current RSU or RSR census in order to select individual households for sampling. I constructed a list of rural households by community using the most recent South Dakota State Highway Department county maps, which were about 20 years old. I numbered each rural residence indicated on the maps

according to the community in which it was located for a total of 2,866 rural residences (Table 3).

Table 3. Number of Tribal housing units and rural residences within the Rosebud Sioux Tribe Service Unit by community and number to be sampled per community.

Community	Housing	<u>Residences</u>		<u>To be Sampled</u>		
		Rural	Total	Non-rural	Rural	Total
On reservation:						
Antelope	142	204	346	6	10	16
Grass Mountain	13	13	26	1	1	2
He Dog	17	15	32	1	1	2
Okcreek	13	112	125	0	2	2
Parmelee	87	38	125	1	3	4
Ring Thunder	11	13	24	2	0	2
Rosebud	200	28	228	10	2	12
Soldier Creek	9	14	23	1	1	2
Spring Creek	19	21	40	1	1	2
St. Francis	102	73	175	6	6	12
Two Strike	35	32	67	1	1	2
Upper Cut Meat	14	26	40	1	1	2
Off reservation:						
Ideal/Winner	46	1062	1108	4	0	4
Butte Creek	4	73	77	0	2	2
Swift Bear	37	87	124	0	4	4
Black Pipe	18	46	64	1	1	2
Corn Creek	9	44	53	1	1	2
Horse Creek	10	57	67	2	0	2
Bull Creek	2	460	462	0	2	2
Milks Camp	19	448	467	2	0	2
Total:	807	2866	3673	44	39	80

A list of non-rural households was accumulated using the most current records of tribally owned housing units from the RST Housing Authority (RSTHA). The document was 8 years old and listed 815 rentals by unit number and community. RSTHA unit number and the physical house number/address were not consistent so the unit number was used only in determining the number of non-rural households to be sampled in each individual

community. I was unable to obtain any type of census or map for privately owned non-rural housing.

I compiled the total number of rural and non-rural residences by community for a total of 3,673 residences within the RSU. I used a table of random numbers to select which residences in each community would be asked to participate in the study.

Once selected, households were approached in a respectful and unassuming manner. Upon answering the door, household representatives were provided with tobacco, assured of confidentiality, and introduced to the project. Upon expressing interest in project participation the household representative was given a project information sheet (Appendix B) to read while I returned to the vehicle for the questionnaire and small gift of appreciation.

If the selected household was not available or not interested in participating, I went to the next closest household that was available. Non-rural households were not restricted to RST Housing Authority units depending upon the closeness of the selected housing numbers. If the Tribal housing numbers randomly selected for that community were numerically close to each other I attempted to sample households in the area that were physically close to each other. Otherwise I moved to another section of the residential area. Rural and non-rural participation within the reservation boundaries was open to all community members regardless of cultural background or affiliation.

Sampling off the reservation was more problematic. Due to the age of the county maps some residences were abandoned or non-existent. Others were inaccessible due to remoteness or physical barriers. There was also occasional poor reception by non-Tribal members toward what they perceived to be a Tribal project taking place outside of the reservation boundary, even though these areas are included in the RSU. Therefore, because a

requirement for inclusion in the study was having Tribal Council representation, I concentrated off-reservation sampling efforts on households located within Tribal housing areas and in areas identified by Tribal members as Tribal member neighborhoods regardless of whether or not they fulfilled the randomly selected designation of rural or non-rural household.

Interview Procedure

The differences between researching in mainstream American society and Native American/Alaska Native cultures is well documented (c.f. Caldwell et al., n.d.; Lomawima, n.d.; Colorado, 1988; Fienup-Riordan, 1988; Giago & Huntizicker, 1991; Mihesuah, 1993; Doyle, 2001; Longley-Cochran, 2002; Neilsen & Gould, 2007). As a non-Tribal member and non-Native American/Alaskan Native descendant, I refined my techniques based on this research as well as my own experience in mainstream and Native American/Alaska Native cultures.

Between 4 July 2005 and 9 September 2006, I administered questionnaires through personal interviews, participated in community events, and maintained contact with project collaborators. In addition to living on the RSR with my children from 27 June 2005 to 18 August 2005, I made six return trips to complete data collection. Data collection trips were conducted in October and November 2005, and May, June, August, and September 2006.

General community member interviews

Rural and non-rural households were interviewed following Lakota standards of etiquette. Participants were provided with a letter explaining the purpose of the survey, that it was approved by SGU Lakota Studies, and providing contact information. Participants were assured of complete confidentiality. I read the questionnaire aloud as the participant

read along. Participants were encouraged to ask questions at any time and were provided necessary background information for questions as needed, such as the predator/prey relationship between black-footed ferret and *Pispiza* and the definition of rotational grazing. Participants were free to speak as they wished. I indicated participant answers and comments on the questionnaire. The questionnaire process lasted from 15 to 30 minutes.

Student interviews

Three days prior to student interviews information sheets were sent home with the students requesting that parents/guardians return a signed form if they did not want their student to participate. The questionnaire was administered to the students in the same fashion as it was to the general community members and complete confidentiality was assured. The questionnaire process lasted from 15 to 30 minutes and students received a gift in appreciation for their time.

Elder interviews

Prior to scheduling Elder interviews I was introduced to the Elder by a member of their family or community. Translators were arranged as needed and were usually a member of the Elder's family. Elders received an honorarium in appreciation of their time and sharing of their knowledge. Translators also received an honorarium.

I followed Huntington's (1997) semi-directive interview approach by sitting quietly and allowing the Elder to lead the interview. Most interviews started with the Elder speaking freely and ended with the completion of the questionnaire. I took notes as they talked. The questionnaire was administered to the Elders in the same fashion as it was to the general community members and complete confidentiality was assured. The interview and questionnaire process lasted about 45 minutes to 1 hour.

Analysis

Factor analysis was performed to extract the dimensions of interest for regression analyses from questions/items related to attitudes regarding *Pispiza* and *Pispiza* management. Factors were extracted using the principal component method with Varimax rotation (Kaiser, 1958) to enhance interpretation. The number of factors to be extracted was determined by the number of factors before the Scree plot leveling off point. Factor reliability was tested with Cronbach's alpha. Low commonality is associated with factor loadings of <0.4 and variables that load heavily on more than one factor complicate factor discrimination. Questions/items with loadings <0.4 under extracted factors, those that were explained equally by both factors, and questions that were deemed to be ambiguous were removed (Table 4).

Table 4. Definition of questions/items used in component analysis. Responses were indicated by a 1-5 Likert scale unless otherwise noted. Scale is 1 if strongly disagree, 2 if disagree, 3 if don't know, 4 if agree, 5 if strongly agree.

Question/item	Definition
Past importance	<i>Pispiza</i> were an important member of native prairie ecosystems in the past.
Current importance	<i>Pispiza</i> are an important member of native prairie ecosystem today.
Past respect	<i>Pispiza</i> held a position of respect in Lakota society and culture in the past.
Current respect	<i>Pispiza</i> holds a position of respect in Lakota society and culture in current times.
Poison	The use of poison is not an acceptable method of <i>Pispiza</i> population management.
Grazing	There is a relationship between amount of cattle grazing on the RSR and <i>Pispiza</i> populations.
Rotational	The use of rotational grazing would help keep <i>Pispiza</i> populations in balance.
Managed by	<i>Pispiza</i> would best be managed by: 1 if poisoning, shooting, or gassing; 3 if I don't know; 5 if rotational grazing or other non-lethal method
Range rats	<i>Pispiza</i> are not range rats that need to be eradicated. 1 if agree, 0 if don't agree.
Farmers	<i>Pispiza</i> are little farmers. 1 if agree, 0 if don't agree.

General community member composite component scores were calculated, then used as the response variable in stepwise regressions to examine selected variables as predictors (Table 5). Items were reverse coded prior to analysis as needed. Variables highly correlated to other variables were removed.

Table 5. Definition of predictor variables.

Variable	Definition
Distance	How far participant lives from the closest <i>Pispiza</i> town. 1 if < 50 yds, 2 if 50 yds-1/4 mile, 3 if > 1/4 mile
Age	Age level of participant. 1 if 10-19, 2 if 20-29, 3 if 30-50, 4 if 51-65, 5 if > 66
Childhood	Where participant spent majority of childhood years. 1 if rural, 2 if not rural.
Ranch	Participant level of ranching/farming experience. 1 if ever have ranched/farmed and/or owned ranch/farm land
Education	1 if < high school degree/GED, 2 if = high school degree/GED, 3 if > high school degree/GED
Culture	Self identification. 1 if Lakota, 2 if not
Traditional	Self identification. 1 if not, 2 if slightly, 3 if some, 4 if mostly, 5 if very
Gender	1 if participant is female, 2 if male.
Elder	0 if non-Elder, 1 if Elder
Student	0 if non-student, 1 if student
See	How often participant usually sees <i>Pispiza</i> . 1 if daily, 2 if weekly, 3 if monthly, 4 if 2-3 times yearly, 5 if never.
Live	Where participant currently lives. 1 if rural, 2 if not rural.

Questions related to the mainstream scientific knowledge of *Pispiza* were awarded 1 point each for question answered in agreement with mainstream scientific knowledge.

Questions not answered in agreement, answered as “I don’t know,” or not answered received 0 points. Composite scores were then used as the response variable in stepwise regressions to examine which variable or combinations of variables best explained the number of responses in agreement per participant. A significance level of 0.05 was used in all tests.

Elder and students component and mainstream scientific knowledge scores were calculated separately but similarly to general community scores. Due to the small population

size of Elders and students, separate models were not developed and testing of the interaction model between the three groups was limited. Therefore, I assumed that the three groups were affected equally by all predictors. After adjusting for all other predictors, I compared whether general community member, Elder, and student groups had different component and/or mainstream scientific knowledge scores.

Results

Seventy-eight community members, 13 Elders, and 19 high school students representing 20 communities within the RSU participated in this study for a total of 109 participants. Out of 92 randomly selected community members 78 participated, for an 85 percent response rate. Demographics of participants by number of general community members, Elders, students, and combination group are shown in Table 6. Participant group demographics by percent are shown in Appendix C.

Table 6. Breakdown of demographics by number for participant groups. * Removed during analysis as being highly correlated to distance

Demographic		General	Elder	Student	Combination
		n=77	n=13	n=19	n=109
Gender:	Female	48	7	11	66
	Male	29	6	8	43
Distance:	< 50 yds	17	4	5	27
	50 yds-1/4 mile	18	5	5	56
	> ¼ mile	42	4	9	26
Culture:	Lakota	61	12	19	90
	Non-Lakota	16	1	0	19
Traditional:	Not	11	0	3	14
	Slightly	7	0	5	12
	Some	22	3	9	34
	Mostly	15	4	0	19
	Very	22	6	2	30
Age:	10-19	3	0	19	22
	20-29	15	0	0	15
	30-50	32	1	0	33
	51-65	20	4	0	24
	65+	7	8	0	15
Childhood:	Rural	28	8	9	45
	Non-rural	49	5	10	64
Ranch:	Yes	36	9	9	54
	No	41	4	10	55
Education:	< high school	20	4	19	43
	= high school	34	2	0	36
	> high school	23	7	0	30
See*	Daily	47	10	8	65
	Weekly	16	3	6	24
	Monthly	5	0	3	8
	Rarely	9	0	2	11
	Never	1	0	0	0
Location*	Rural	31	7	13	51
	Non-rural	46	6	6	59

Factor Analysis

Based on the scree plot leveling off point, I specified two factors to be selected (Kaiser-Meyer-Olkin=0.704). The factors were identified and interpreted as respect for *Pispiza* (*respect*) and as pro-non-lethal management of *Pispiza* (*management*). Together, the factors explain 49.33 percent of the variance with individual question/item variances ranging from 29 percent to 60.9 percent. One-sentence factor definitions are:

1. **Respect for *Pispiza* (*respect*):** Strong belief that *Pispiza* held and/or holds a position of respect in the Lakota culture and was and/or is an important member of the prairie ecosystem (n= 7 questions, α = 0.758, variance= 28.7 percent).
2. **Pro-non-lethal management (*management*):** Strong belief that *Pispiza* populations should be managed and controlled through non-lethal methods as opposed to lethal methods (n= 3 questions, α =0.581, variance = 20.63 percent).

Questions/items with loadings of 0.4 or greater under a factor were therefore considered to be explained by that factor and were retained (Table 7). Nine of nineteen questions/items were removed from factor analysis due to loadings of less than 0.4, being explained equally by both factors, or for being ambiguous.

Table 7. Mean, standard deviation, factor loadings and extracted communality for questions/items retained by factor analysis. Significant factor loadings are indicated in bold. n = 77 responses for each question/item.

QUESTION/ITEM:	Mean	Std. Dev	Factor Loading		Comm.
			Respect	Management	
Past importance	3.43	0.95	0.835	0.009	0.698
Past respect	3.27	0.85	0.778	0.055	0.609
Current importance	2.71	1.02	0.621	0.306	0.480
Poison	2.87	1.78	0.580	-0.346	0.456
Range rats	0.48	0.50	0.547	0.309	0.395
Current respect	2.48	0.91	0.519	0.296	0.357
Farmers	0.27	0.45	0.470	-0.272	0.295
Grazing	2.79	0.95	0.024	0.769	0.592
Rotational	3.10	1.04	0.156	0.745	0.579
Best managed	2.87	1.79	0.172	0.665	0.472

Community Member Scores:

Stepwise regressions were performed using general community member composite component scores for the respect and management components and scores for mainstream scientific knowledge (Table 8). The final model for the respect component included the culture and ranching experience variables ($F=5.39$, $P=0.007$, adjusted $R^2=0.11$). Self-identification as Lakota was associated with greater respect for *Pispiza*, while having ranching experience decreased respect scores. The final model for the pro-non-lethal management component included the education and distance variables ($F=5.428$, $P=0.002$, adjusted $R^2=0.152$). Increases in distance and education level above high school increased non-lethal management scores. Ranching experience and education variables were selected in the final mainstream scientific knowledge model ($F=5.413$, $P=0.006$, adjusted $R^2=0.104$). Ranching experience was associated with greater mainstream scientific knowledge and education level greater than high school was also associated with higher scores.

Table 8. Significant variable results and associated affects to general community member respect, management, and mainstream scientific knowledge scores

	Variable	B	Error	T	P	VIF
Respect	Ranch	.264	.129	2.046	.044	1.020
	Culture	-.366	.161	-2.272	.026	1.018
Management	Distance > ¼ mile	.950	.267	3.553	.001	1.656
	Education > high school	.617	.232	2.653	.010	1.069
	Distance = 50 yds> ¼ mile	.699	.304	2.296	.025	1.571
Mainstream biology	Ranch	-.881	.334	-2.638	.010	1.002
	Education > high school	.756	.364	2.078	.041	1.002

Combined Community Member, Elder, and Student Scores

Stepwise regressions were performed using a combination general community member, Elder, and student composite component scores for the respect and management components and combined scores for mainstream scientific knowledge. The final model for the respect component ($F=7.766$, $P < 0.001$, adjusted $R^2= 0.205$) included education, distance, Elder, and ranch variables (Table 9). Being an Elder and living $> \frac{1}{4}$ mile from *Pispiza* colonies increased respect scores while education equal to high school decreased scores. Ranching experience was associated with lower respect scores. The final pro-non-lethal management model included education, distance, and Elder variables ($F= 6.579$, $P < 0.001$, adjusted $R^2=0.137$). Education greater than high school, distance $> \frac{1}{4}$ mile, and being an Elder increased non-lethal management scores. Variables included in the final mainstream scientific knowledge model were ranch, student, and education ($F=5.562$, $P=.001$, adjusted $R^2=.112$). Ranching experience is associated with higher mainstream scientific knowledge

scores while being a high school student and an education level of high school decreased scores.

Table 9. Significant variable results and associated affects to combined community member, Elder, and student respect, management, and mainstream scientific knowledge scores.

	Variable	B	Error	T	P	VIF
Respect	Education = High school	-.330	.112	-2.951	.004	1.052
	Distance > ¼ mile	.294	.105	2.794	.006	1.052
	Elder	.453	.160	2.828	.006	1.049
	Ranch	.273	.105	2.604	.011	1.044
Management	Education > high school	.517	.198	2.615	.010	1.076
	Distance > ¼ mile	.487	.175	2.788	.006	1.037
	Elder	.620	.268	2.311	.023	1.051
Mainstream biology	Ranch	-.689	.258	-2.672	.009	1.0
	Student	-1.011	.359	-2.817	.006	1.117
	education = hs diploma	-.583	.290	-2.015	.046	1.116

Discussion

Few other studies have addressed the relationship between culture and attitudes toward wildlife, especially as related to Native American culture. Cultural differences have been found to affect interactions with and attitudes toward marine wildlife (Whitely et al., 1998) and attitudes related to fishing practices (Hunt, Floyd, and Ditton, 2007). However, neither Lakota culture nor that of any Native American Tribe was included in these studies nor were the attitudes or interactions related to *Pispiza*.

While a variety of attitudes toward *Pispiza* were observed on the Rosebud Sioux Reservation, my results indicate that attitudes were associated with cultural differences

(Lakota compared to non-Lakota). Being Lakota might have been significantly linked to having respect for prairie dogs due to the fact that the majority of general community Lakota participants (n=61) did not have ranching experience (n=35), which was significantly linked to having lower respect. If so, this might help explain 1) why being Lakota goes from being a significant predictor of attitudes for the general community to not being significant with the addition of 32 Elders and students, of which 56 percent had ranching experience and 2) why culture was significantly linked to respect while traditionalism was not.

It seems unlikely that the change was simply due to the Elder and student addition, as being an Elder was linked to having higher respect for *Pispiza* and being a student had no significant effect upon respect. It is possible that the lack of relationship between being a student and respect could eliminate the effect of culture in the community as a whole. Alternatively, the addition of the Elders and students, whom increased the percentage of participants with ranching experience in the survey by 2.8 percent, may have resulted in cultural effects being overridden by the strong association between ranching experience and respect.

Similar effects of ranching experience have been found off-reservation, as well (Reading & Kellert, 1993; Lamb, Cline, Brinson, Sexton, & Ponds, 2001; Reading et al., 2006). Some ranchers and farmers hold deep-set beliefs that prairie dogs are responsible for economic losses through forage competition, livestock injury from prairie dog burrows, crop loss, draining of irrigated fields, and damage to haying equipment (Hygnstrom & Virchow, 1994; Long, 1998). Such beliefs, which are hard to change and are passed from one generation of people to the next (Jones, 1999; Fox-Parrish & Jurin, 2008), combined with

ranchers' regular exposure to prairie dog activity may also help explain on-reservation ranching/farming attitudes toward prairie dogs.

Forty-nine percent (n=54) of all participants had ranching experience. Of these, 56 percent (n=30) believed poison to be an acceptable method of prairie dog management. However, several mentioned that they felt poison should only be used as a last resort or that they had no other choice but to poison. One rancher explained that he ranches Tribal trust land and that his BIA lease contract (the BIA holds trust responsibility for Tribal lands) specifically states that prairie dog populations must be "controlled" or risk loss of lease. It seems unlikely that anti-poison sentiments were related to sympathy for prairie dog suffering as ranching experience was associated with negative respect attitudes and did not affect non-lethal management attitudes. A more likely explanation might be environmental concerns, such as potential impact on non-target species or effects on human health.

Ranchers' need to manage prairie dog populations probably explains the link between ranching experience and higher mainstream scientific knowledge. To efficiently manage colonies, be it by lethal or non-lethal methods, it is necessary for land managers to be aware of the species' behavior and biology. This knowledge can be obtained by simple observation, research, education, or some combination. For example, awareness of prairie dog dietary habits informs land managers that poisoning is best carried out during the fall, when fresh grass is not available and females and young are no longer living below the surface. A pre-bait of un-poisoned oats a few days before the actual poisoned oats are provided is also necessary (Andelt & Hopper, 2003). Managers preferring non-lethal management methods can utilize prairie dogs' need of an unobstructed view to discourage expansion through the use of visual barriers such as burlap (Andelt & Hopper, 2003).

Participant self-identification of cultural and traditionalism level might explain the lack of a significant effect of traditionalism on attitudes of both general and combination community groups. As both cultural and traditional identification should be a personal decision, certainly not defined nor determined by a non-Lakota, participants were asked to self identify based upon their own definition of cultural and traditional levels. On the cultural level, this occasionally created discussion in which some participants appeared to be defensive and felt a need to justify their answers. In addition, there was considerable anecdotal evidence that the traditionalism question was difficult for some to answer and several participants had to consider for awhile which level was most appropriate for them.

Another potential explanation for the lack of effect of traditionalism could be the cultural damage government and church boarding schools inflicted upon generations of Native American and Native Alaskan children, including children from the Rosebud Sioux Reservation. Children were forcibly removed from their homes and families, sometimes for years at a time, not allowed to dress or wear their hair in their traditional ways, and were beaten for speaking their native language (Noriega, 1992; Unger, 1977). The cultural effects caused by children being stripped of their cultural pride and identification and from suffering and learning abusive behaviors- sexual, emotional, and physical- have inflicted devastating consequences for American Indian families and communities (Brave Heart-Jordan, 1995; Dlugokinski and Kramer, 1974; Irwin and Roll, 1995; Noriega, 1992; Tanner, 1982). Several older participants mentioned the negative effects of boarding schools to their sense of culture and to their family.

If cultural association does simply exist as an artifact of the association with ranching experience in the participant pool, what ramifications does this present with respect to the

prevalence/continuance of Traditional Ecological Wisdom? While this pilot study cannot presume to answer such questions they should be addressed in future studies.

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CHAPTER 3. GENERAL CONCLUSION

Conclusion

A variety of *Pispiza* related attitudes were observed on the Rosebud Sioux Reservation and several factors were identified as significantly affecting these attitudes, beliefs, and/or knowledge. Factors found to affect *Pispiza* respect levels included ranching experience, cultural differences, and being an Elder. Ranching experience was also found to effect levels of mainstream scientific knowledge.

This research provided interesting answers regarding relationships on the Rosebud Sioux Reservation between stakeholders and *Pispiza*. The insight provided should prove helpful in understanding and communicating with the various stakeholder groups and in addressing community and Tribal member *Pispiza* concerns, as well as the development of educational programs and opportunities. It is also hoped that this research will emphasize that Tribal Nations must be included in *Pispiza* conservation and management decision while not being left carrying the majority of the conservation “burden.”

Recommendations

As this research was performed as a pilot study, further exploration is necessary to verify and expand upon the relationships reported. Future research should incorporate additional questionnaire items related to participant demographics and *Pispiza* associated attitudes and experiences, as well as increase the scope of the potential participant field.

Suggested topics for future research questions/items include the effects of boarding school to participant and/or participant family members’ sense of self and/or culture; the intrinsic value of both wildlife in general and *Pispiza*; and related to personal *Pispiza*

experience or interaction. Additional recommendation is the incorporation of Wildlife Value Orientation Model as described by Teel (2004) to further explore Tribal member attitudes towards *Pispiza* and wildlife in general.

Study participation should expand to include the other Tribes within the historic prairie dog range, especially the Cheyenne River Sioux due to their Prairie Management Program and the Pine Ridge Sioux due to the large amount of occupied prairie dog habitat. The addition of urban participants, both Tribal member and non-tribal member, would be beneficial, as would the addition of more high school students including those from off-reservation schools. An increase in Elder participants would also be advantageous.

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APPENDIX A.
PROJECT QUESTIONNAIRE

The purpose of this study is to learn about community knowledge, attitudes, and beliefs on the Rosebud Sioux Reservation (RSR) regarding pispiza (black-tailed prairie dog). Management decisions regarding any species need to be made with an understanding of the species and its relationship to humans, especially with a species as controversial as pispiza. The information gained in this study will help provide a better understanding of the wide range of knowledge, attitudes, and beliefs regarding pispiza that are held by stakeholders that live, work, or own property on the RSR. Identifying the range of knowledge, attitudes, and beliefs related to pispiza will provide valuable information that can be used to develop management plans designed to return balance to pispiza populations both on the RSR and off and can be used to develop children's educational programs. All information is completely confidential. Thank you for your help in this study.

Listed below are a series of cultural and environmental statements regarding the possible role that pispiza, black-tailed prairie dog, currently plays or has played in the past, and related to management practices. Please rate the following statements on a scale of 1-5, based on how strongly you agree or disagree, with 1 meaning you strongly disagree and 5 meaning that you strongly agree, unless directed otherwise.

Pispiza held a position of respect in Lakota society and culture in the past.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

Pispiza holds a position of respect in Lakota society and culture in current times.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

Pispiza were an important member of native prairie ecosystems in the past.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

Pispiza are an important member of native prairie ecosystem in current times.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

The use of poison is an acceptable method of pispiza population management.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

Increasing black-footed ferret populations will help manage pispiza numbers

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

The combination of drought and overgrazing of cattle is the main cause of pispiza population changes.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

The use of rotational grazing would help keep pispiza populations in balance.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

The amount of grazing by cattle on the Rosebud Sioux Reservation has no relationship to pispiza populations.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

Pispiza management on the Rosebud Reservation should be a priority.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

I am satisfied with the current management of pispiza on the Rosebud Reservation.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

A healthy native prairie ecosystem on the Rosebud Sioux Reservation is important to me.

Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1	2	3	4	5

Please select the **one phrase** that best completes the following statement:

Pispiza populations on the Rosebud Reservation:

- Need to be decreased _____
- Are too large in some areas _____
- Are about right _____
- Are too small in some areas _____
- Need to be increased _____

In order for managers to work well with citizens it is important to understand what citizens commonly known about pispiza. For each statement below please check the one phrase that best completes each sentence.

Pispiza that interfere with human activities are most often:

- Trapped and moved to a new location _____
- Killed with poison _____
- Killed by shooting _____
- Not sure _____

Pispiza are most active during:

- Daytime _____
- Nighttime _____
- Both day and night _____
- Not sure _____

A disease that can occur in both pispiza and people is:

- Rabies _____
- Distemper _____
- Plague _____
- Not sure _____

Pispiza live in groups called:

- Harems _____
- Coteries _____
- Packs _____
- Not sure _____

Pispiza normally have _____ litters of pups each year:

- 1 litter _____
- 2 litters _____
- 3 or more litters _____
- Not sure _____

Pispiza communicate with each other with:

- Complex barks and whistles _____
- Pispiza have no verbal communication _____
- Grunts and tail flashes _____
- I don't know _____

Pispiza closest relatives are:

- Marmots _____
- Dogs _____
- Chipmunks _____
- Black-footed ferrets _____
- Not sure _____

Please check **as many** of the following that you feel describes pispiza:

- Little farmers _____
- Range rats that need to be eradicated _____
- A sign of poor ranch management _____
- Healers of the land _____
- Knowledgeable about plants and medicine _____

Pispiza populations would best be managed by:

- Poisoning _____
- Shooting _____
- Gassing _____
- Use of rotational grazing _____
- I don't know _____
- Other method, such as _____

Learning which factors may predict knowledge, attitudes and beliefs regarding pispiza will allow managers to create a better pispiza management plans that will work for the most people. To help us identify these factors please check the one phrase that best completes each of the following statements. All information is strictly confidential.

Which best describes how far you live from a pispiza town?

- Within 50 yards of my home _____
- Between 50 yards and 1/4 mile from my home _____
- More than 1/4 mile from my home _____
- I don't know where the nearest prairie dog town to my home is _____

In general, how often do you see pispiza?

- I see them every day _____
- I see them every week _____
- I see them every month _____
- I rarely see them, maybe 2 or 3 times a year _____
- I never see them _____

Do you consider yourself?

- Lakota _____ non-Lakota _____

How traditional or non-traditional do you consider yourself?

Not traditional at all _____
 Slightly traditional _____
 Some traditional _____
 Mostly traditional _____
 Very traditional _____

Your age is range is:

10-19 _____ 20-29 _____ 30-50 _____ 51-65 _____ 66+ _____

Where do you currently live?

On Rosebud: Rural _____ Small town or community _____ City _____
 Off Rosebud: Rural _____ Small town or community _____ City _____

Where did you spend most of your growing up years as a child?

On Rosebud: Rural _____ Small town or community _____ City _____
 Off Rosebud: Rural _____ Small town or community _____ City _____

Which of the following best describes your experience with ranching?

Presently ranch _____
 Presently own ranch land _____
 Used to ranch _____
 Used to own ranch land _____
 I have never ranched or owned ranch land but a friend or family member does ____
 I have no experience with ranching _____

Please circle the highest level of formal education you have finished.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Which best describes your usual job status?

Agriculture ____
 Homemaker ____
 Office worker ____
 Professional/technical ____
 Retired ____
 Self-employed ____
 Student ____
 Trade worker ____
 Unemployed ____
 Other ____

It has been said that the behavior and habits of pispiza have started to change in recent years. Have you noticed any change(s)? If so please give examples.

To help identify how pispiza was viewed in the past please share what your Elders said about pispiza:

Additional comments you would like to make about pispiza or their management:

Thank you for your participation

APPENDIX B.
PROJECT INFORMATION SHEET

"Knowledge, Attitudes, & Beliefs on the Rosebud Sioux Reservation Regarding Pispiza"

(Black-tailed Prairie Dog, *Cynomys ludovicianus*)

* A partnership project between Sinte Gleska University and Iowa State University involving community/tribal members' beliefs and overall knowledge of the Pispiza Nation.

*This project will give community/tribal members the opportunity to have their pispiza concerns included and addressed by all Land Management Practices. ALL INFORMATION IS CONFIDENTIAL.

*Project is in cooperation with Albert White Hat and Brian Dillon as tribal consultants and co-authors.

* For every Representative on Council in each community, 4 households will be randomly selected and asked to fill out short questionnaires related to the role pispiza plays in Lakota culture and in the environment. For example, St. Francis has 3 Representatives so 12 households will be asked to participate. Participants will be given a small gift in appreciation for their time. Each community is asked to select 1 or 2 Elders to represent their community in sharing how pispiza of today compares to pispiza of the past. The Elders will be gifted with an honorarium in appreciation of their time and sharing.

*Information from consenting participants will be summarized, interpreted, and written into a report to be used for educational purposes. Before the report is finalized copies will be provided to each community for review.

Included as an appendix in the report will be UNEDITED (unless requested) comments from interested parties about the project and the information in the report. After the report is finalized copies will be provided to each community as well as to the Rosebud Sioux Tribe and its Land Management and Natural Resource Agencies.

FOR MORE INFORMATION CONTACT:

Project leader ~OR~ Dept of Lakota Studies

Jeanne Spaur

cell 515-708-0020

jdsb@iastate.edu

Sinte Gleska University

605-856-8100



APPENDIX C.

PARTICIPANT DEMOGRAPHIC FREQUENCY GRAPHS

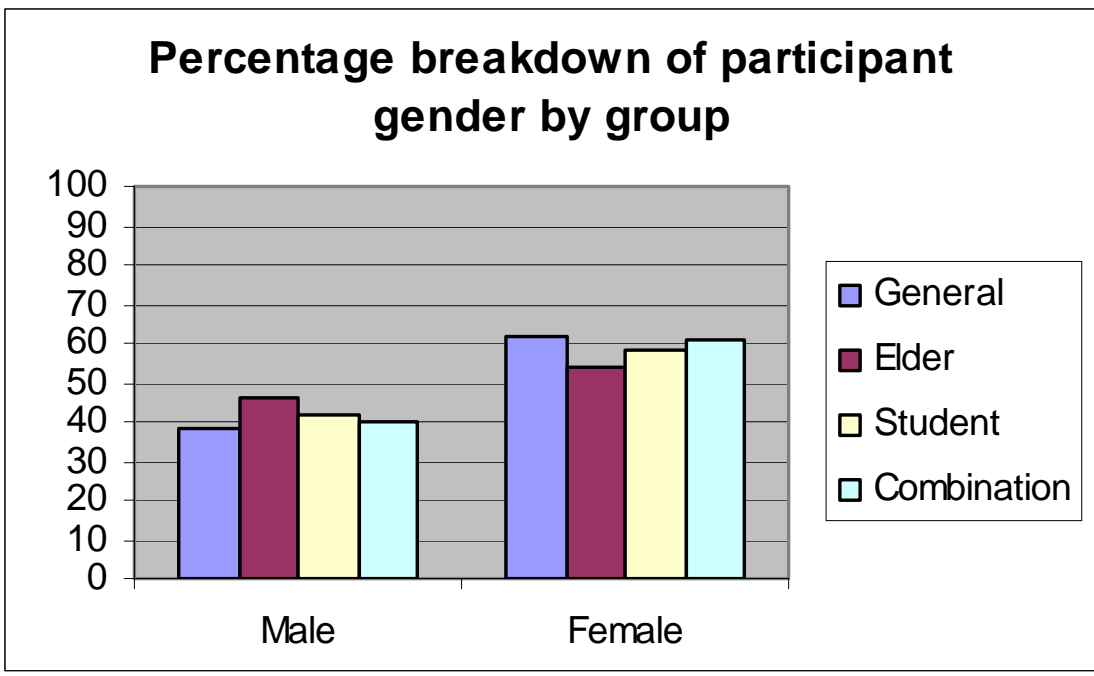


Figure 1. Comparison of participant gender levels by group and percent

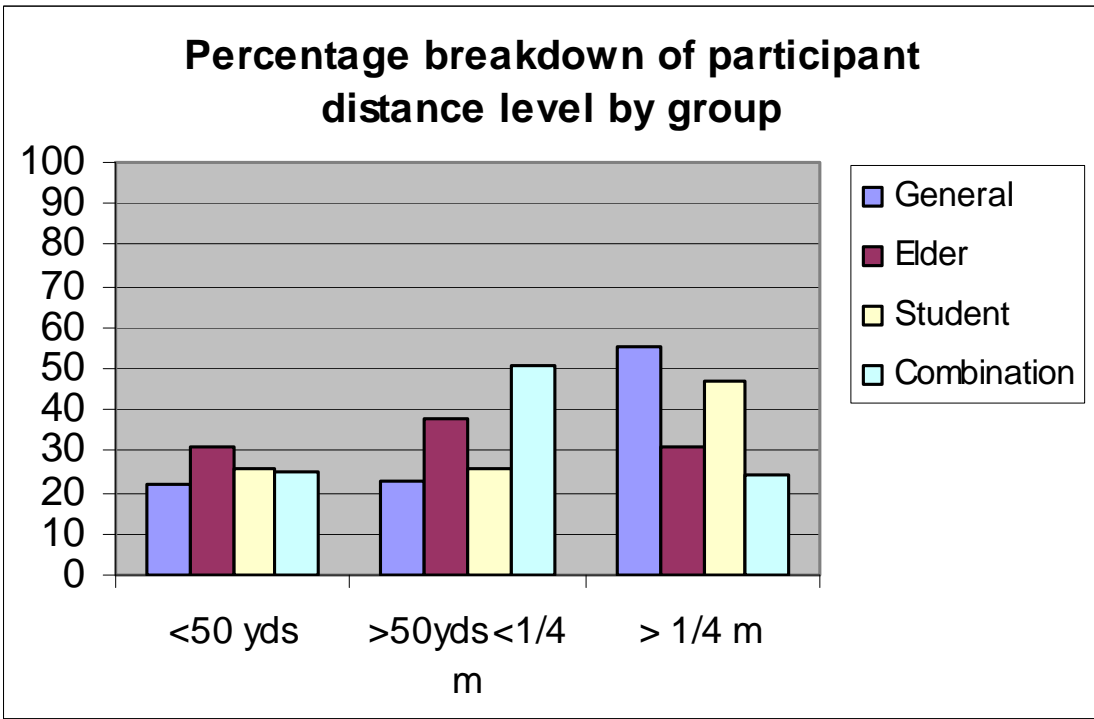


Figure 2. Comparison of distance participant lives from Pispiza colony by group and percent.

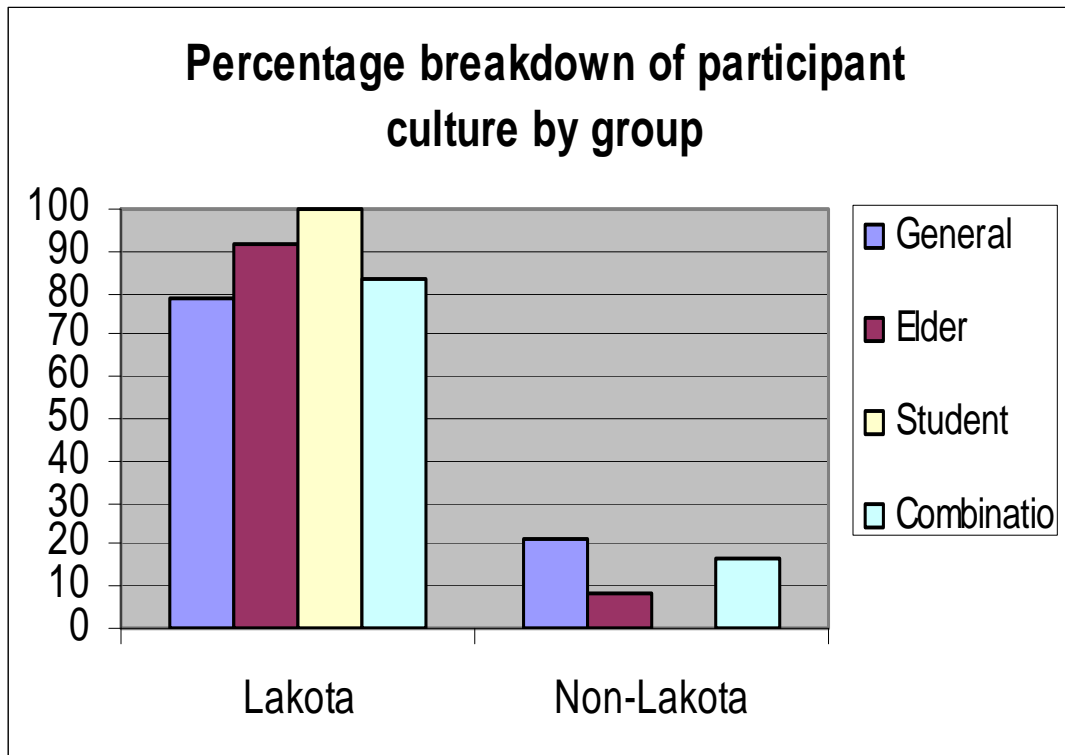


Figure 3. Comparison of participant self identified culture level by group and percent.

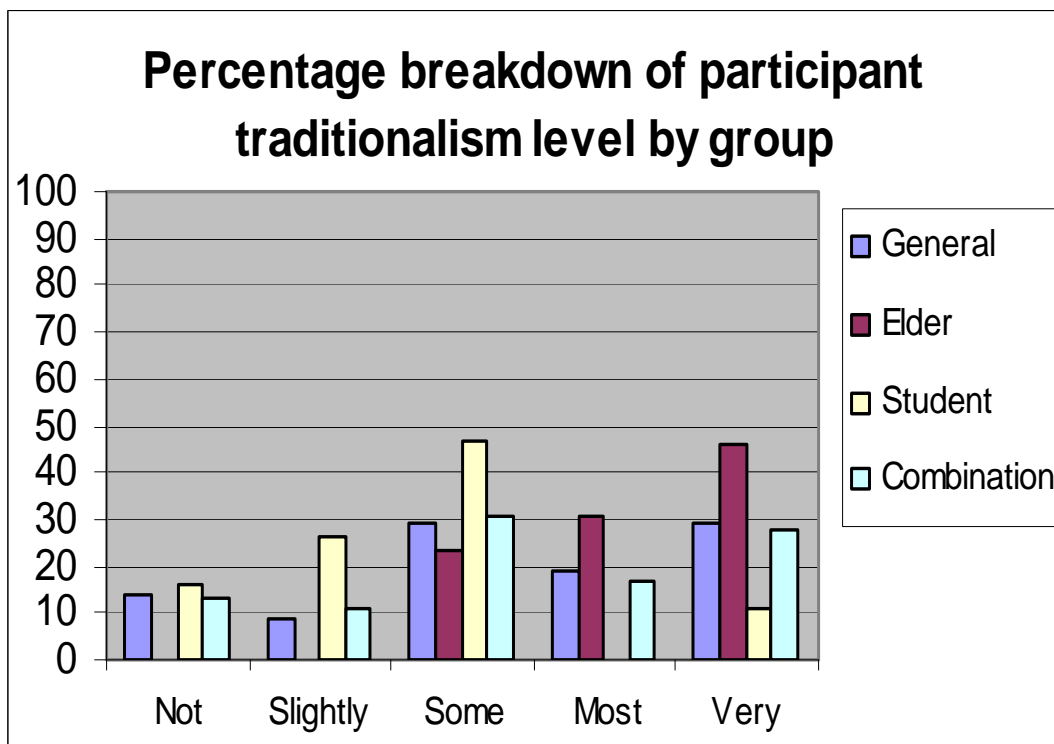


Figure 4. Comparison of participant self identified traditionalism level by group and percent.

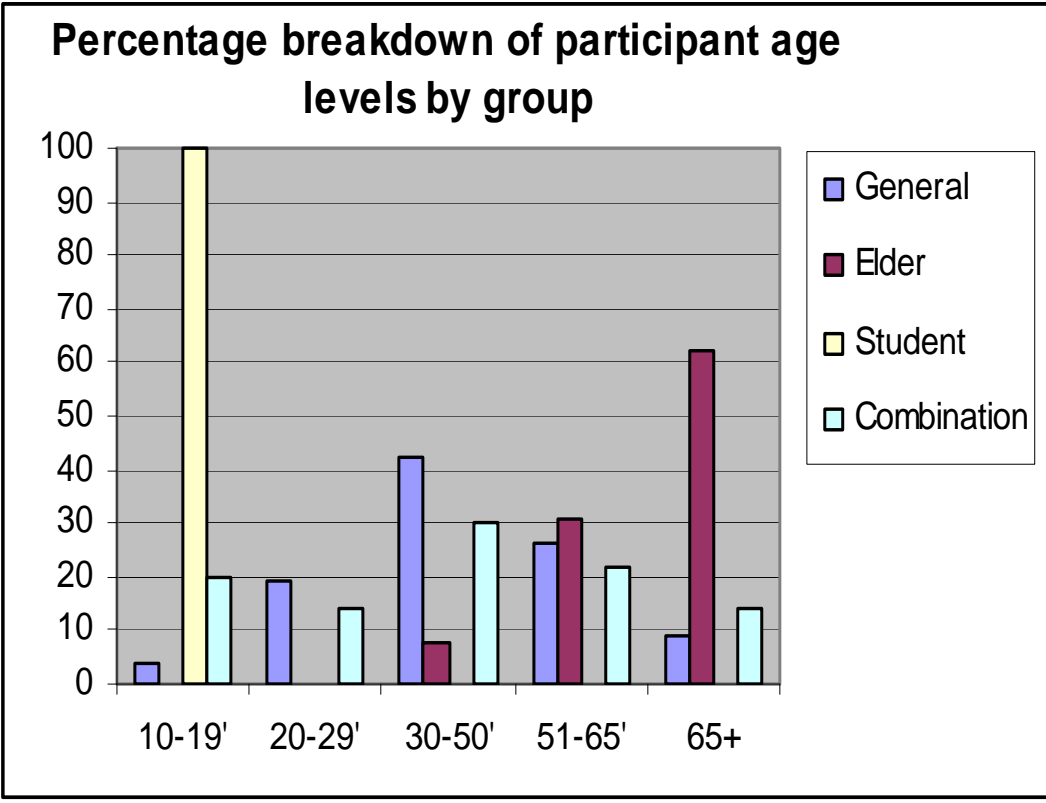


Figure 5. Comparison of participant age level by group and percent

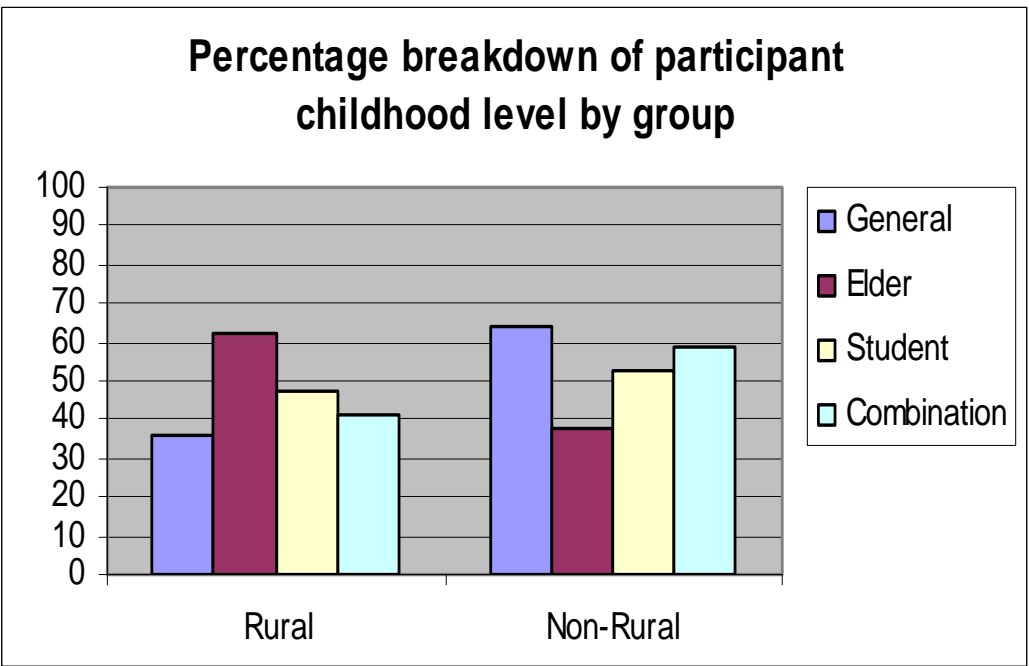


Figure 6. Comparison of where participants grew up, rural vs. non-rural, by group and percent.

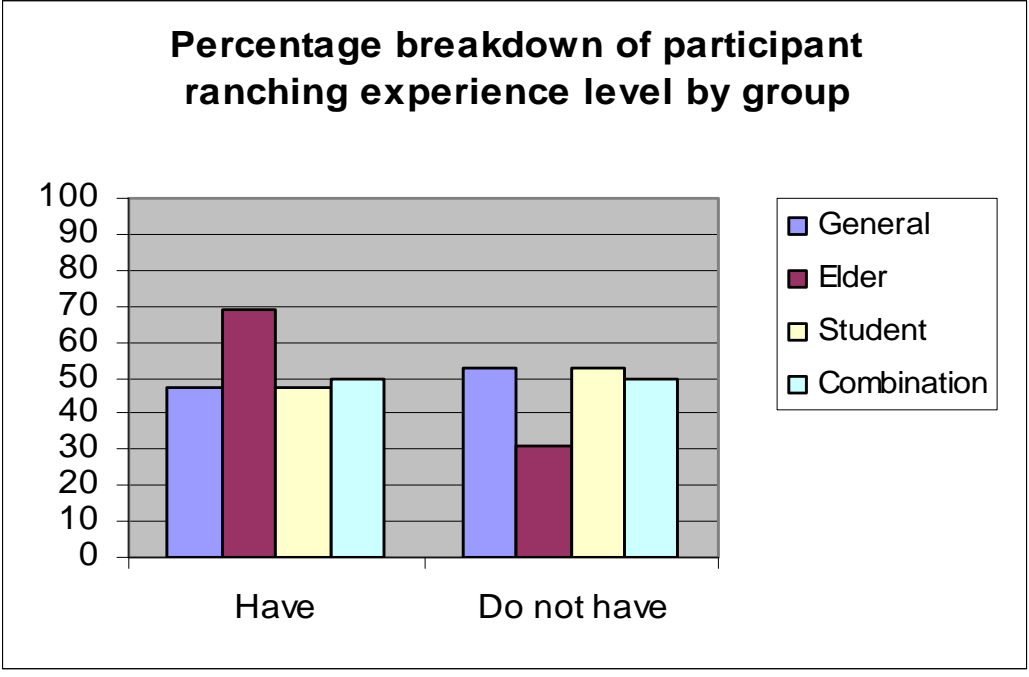


Figure 7. Comparison of participant ranching experience by group and percent.

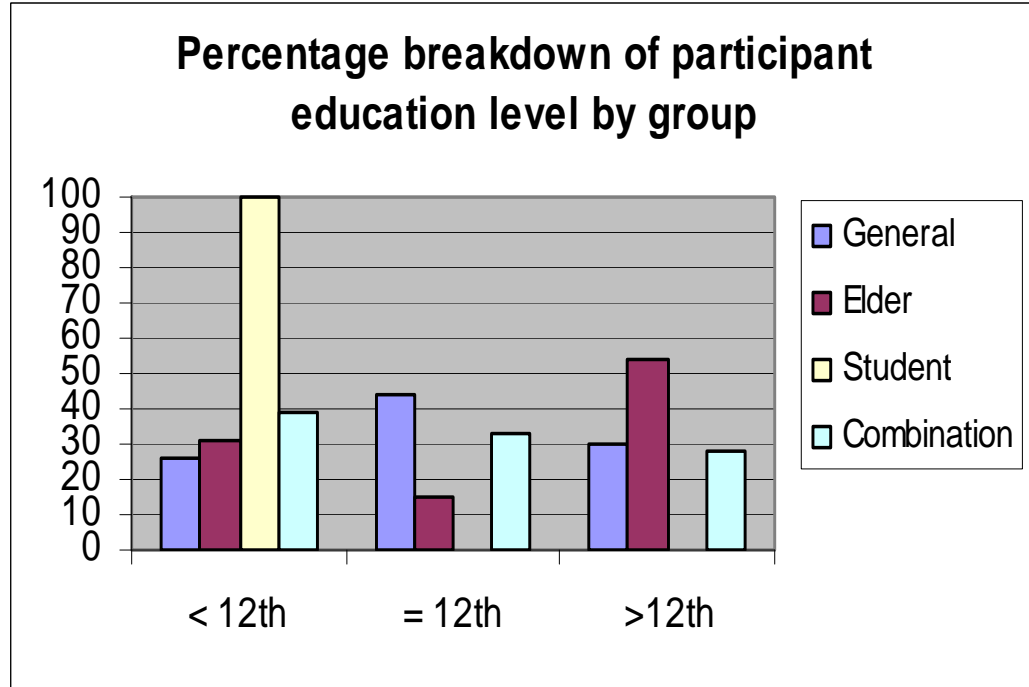


Figure 8. Comparison of participant education level by group and percent.

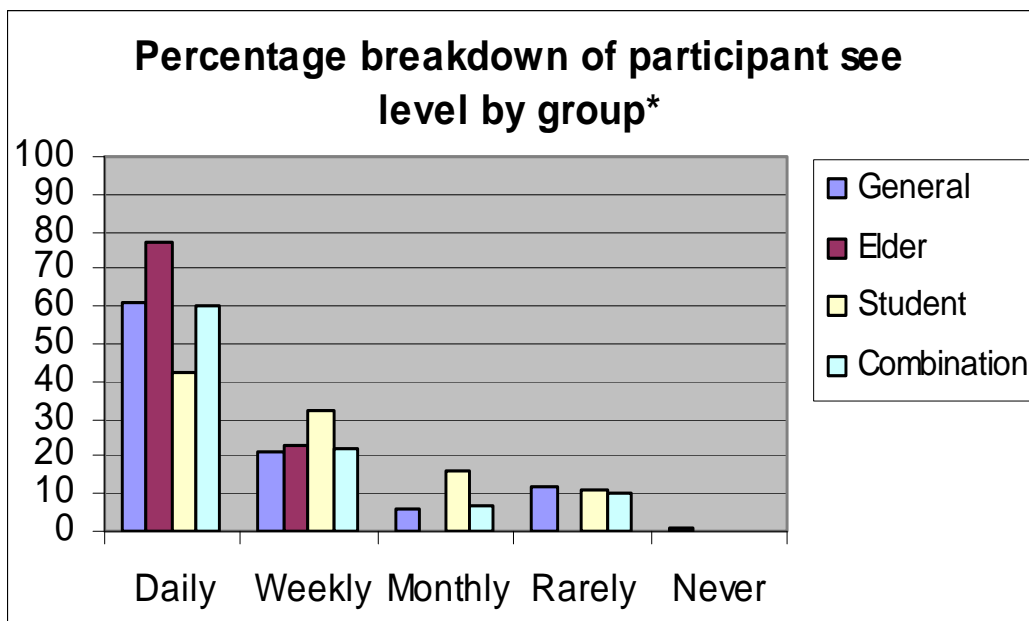


Figure 9. Comparison of how often participant sees Pispiza, by group and percent. *Removed during analysis as highly correlated to distance question.

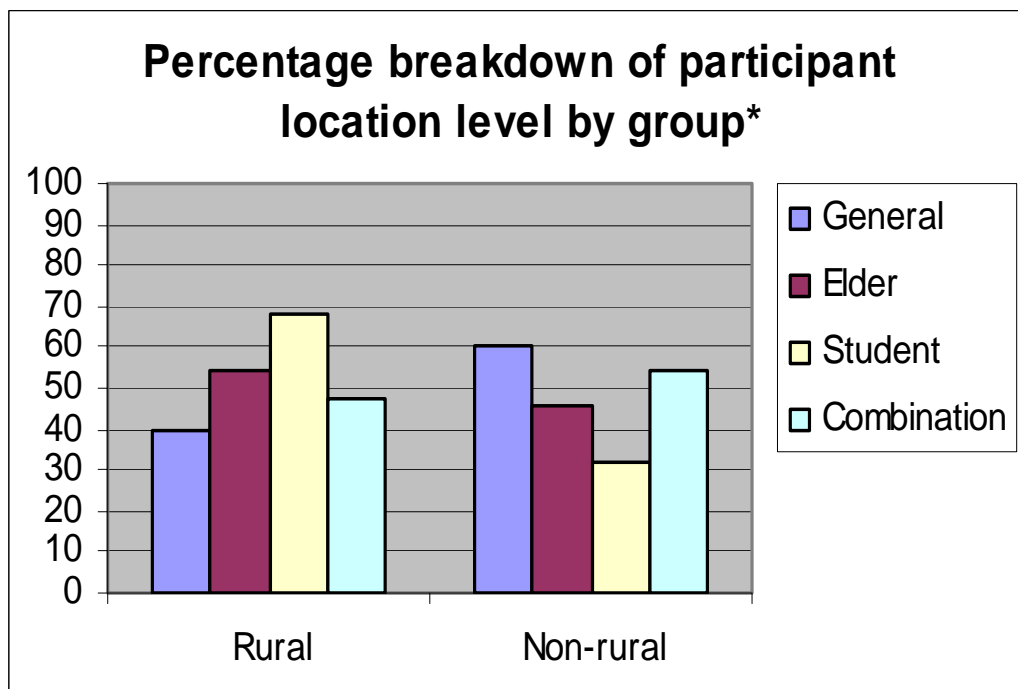


Figure 10. Comparison of where a participant currently lives by group and percent. *Removed during analysis as being correlated to distance question.

APPENDIX D.

**SINTE GLESKA UNIVERSITY RESEARCH COMMITTEE PROJECT
APPROVAL LETTER**



SINTE GLESKA UNIVERSITY
P.O. BOX 105
ROSEBUD RESERVATION,
MISSION, SOUTH DAKOTA 57555-0105
(605) 856-4463
LAND GRANTED BY THE ROSEBUD SIOUX TRIBE 1873

ACCREDITED BY
THE NORTH CENTRAL ASSOCIATION
OF COLLEGES AND SCHOOLS 1983

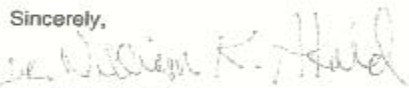
Jeanne Spaur
Department of Natural Resource Ecology and Management
Iowa State University
Ames, IA 50011-3221

June 21, 2005

Ms. Spaur:

This letter is to inform you that the Sinte Gleska University Research Committee met and discussed your proposed study on prairie dogs and we have no concerns or questions about the proposed study at this time. Therefore we recommend that the study proceed as planned. If you have any questions or concerns please feel free to contact the Committee.

Thank you for your time and attention to this matter.

Sincerely,

Dr. William K. Akard
Chairman, SGU Research Committee
Sinte Gleska University

APPENDIX E.

ROSEBUD SIOUX TRIBE PRAIRIE MANAGEMENT PROGRAM

PROJECT SUPPORT LETTER



Rosebud Sioux Tribe Prairie Management Program

Physical Address:
1004 Omaha Street
RIA Building, Room 41
Mission, SD 57570

Mailing Address:
P.O. BOX 430
ROSEBUD SD 57570

605-856-4772
605-856-4590 fax
rstpmp@gwtc.net



August 9, 2005

To whom it may concern:

This letter supports Sinte Gleska University (SGU) and Iowa State University's (ISU) partnership, which includes research concerning community/tribal members' beliefs and overall knowledge of the Pispiza Nation (prairie dogs). The project, titled "Knowledge, Beliefs, and Attitudes on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dog, *Cynomys ludovicianus*), is being led by ISU graduate student Jeanne Spaur in cooperation with Albert White Hat and Lisa Colombe as tribal consultants and co-authors.

The Rosebud Sioux Tribe Prairie Management Program supports this project through cooperative planning, information exchange and dissemination to the public. The Prairie Management Program is responsible for prairie dog ecosystem management. This is a great opportunity to not only gain insight from the public, but also exchange information on prairie dog management. Therefore, the RST Prairie Management Program is excited about the findings this project has to offer. Information of Prairie Dogs will help tribal land entities include community and tribal member concerns into all Land Management Practices. The Prairie management Program will continue to assist Jeanne Spaur with any and all needs within the scope of our organization.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Dillon".

Brian Dillon, Coordinator
Rosebud Sioux Tribe
Prairie Management Program

APPENDIX F.

ROSEBUD SIOUX TRIBE GAME, FISH, & PARKS DEPARTMENT

PROJECT SUPPORT LETTER



**ROSEBUD SIOUX TRIBE
GAME, FISH & PARKS**

1165 Circle Drive
PO Box 300
Rosebud, SD 57570-0300
Phone 605-747-2289
Fax 605-747-2809
Toll-Free 1-888-747-8686
www.rstgfp.net

DATE: August 2, 2005

To whom it may concern:

This letter supports Sinte Gleska University (SGU) and Iowa State University's (ISU) partnership, which includes research concerning community/tribal members' beliefs and overall knowledge of the Pispiza Nation (prairie dogs). The project, titled "Knowledge, Beliefs, and Attitudes on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dog, *Cynomys ludovicianus*), is being led by ISU graduate student Jeanne Spaur in cooperation with Albert White Hat and Lisa Colombe as tribal consultants and co-authors.

The Department of Game Fish & Parks supports this project. Public views and opinions are a very critical in developing new policies and conservation measures. The program is very interested in the results of this study. There has been no study in the past that emphasizes the cultural aspects of the prairie dog. I feel the study will finally give policy makers solid documentation on the cultural aspects of the prairie dog. This documentation may change the way land is managed within the Rosebud Sioux Tribe.

A handwritten signature in blue ink that reads "Chance Wooden Knife".

Chance Wooden Knife
Director

APPENDIX G.

SINTE GLESKA UNIVERSITY RANCH PROJECT SUPPORT LETTER



SINTE GLESKA UNIVERSITY

P.O. BOX 490
 ROSEBUD SIOUX RESERVATION
 ROSEBUD, SOUTH DAKOTA 57570-0490
 TELEPHONE: 605-747-2263
 TOLL FREE: 877-746-8333
 CHARTERED BY THE ROSEBUD SIOUX TRIBE 1971

ACCREDITED BY
 THE NORTH CENTRAL ASSOCIATION
 OF COLLEGES AND SCHOOLS 1983

June 27, 2005

To whom it may concern:

This letter supports Sinte Gleska University (SGU) and Iowa State University's (ISU) partnership, which includes research concerning community/tribal members' beliefs and overall knowledge of the Pispiza Nation (prairie dogs). The project, titled "Knowledge, Beliefs, and Attitudes on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dog, *Cynomys ludovicianus*), is being led by ISU graduate student Jeanne Spaur in cooperation with Albert White Hat and Lisa Colombe as tribal consultants and co-authors.

SGU Ranch supports this project through office facilities, staff support, and residential needs of ISU graduate student, Jeanne Spaur. SGU Ranch has conducted various community education projects addressing natural resources concerns within tribal communities of the Rosebud Nation. One of the highest rated concerns over the past three years has been the issue of Prairie Dog management or lack of management. Therefore, SGU Ranch is excited about the findings this project has to offer. Information of Prairie Dogs will help tribal land entities include community and tribal member concerns into all Land Management Practices. SGU Ranch will continue to assist Jeanne Spaur with any and all needs within the scope of our organization.

Sincerely,

Lisa Colombe
 SGU Ranch Director
 Natural Resources Education Project Co-Campus Coordinator

APPENDIX H.

IOWA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD

PROJECT APPROVAL LETTER

(Renewed July 4, 2006)

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office of Research Compliance
Vice Provost for Research
1130 Dawson Hall
Ames, Iowa 50011-2207
515-204-4566
FAX 515-204-4267

TO: Jeanne Spaur

FROM: Human Subject Research Compliance Office *Donald M. Eason*

PROJECT TITLE: Knowledge, Attitudes, and Beliefs on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dog, *Cynomys ludovicianus*).

RE: IRB ID No.: 05-299

APPROVAL DATE: June 26, 2005

REVIEW DATE: June 26, 2005

LENGTH OF APPROVAL: One year

CONTINUING REVIEW DATE: June 25, 2006

TYPE OF APPLICATION: New Project Continuing Review

Your human subjects research project application, as indicated above, has been approved by the Iowa State University IRB #1 for recruitment of subjects not to exceed the number indicated on the application form. All research for this study must be conducted according to the proposal that was approved by the IRB. If written informed consent is required, the IRB-stamped and dated Informed Consent Document(s), approved by the IRB for this project only are attached. Please make copies from the attached "masters" for subjects to sign upon agreeing to participate. The original signed Informed Consent Document should be placed in your study files. A copy of the Informed Consent Document should be given to the subject.

The IRB must conduct **continuing review** of research at intervals appropriate to the degree of risk, but not less than once per year. Renewal is the PI's responsibility, but as a reminder, you will receive notices at least 60 days and 30 days prior to the next review. **Please note the continuing review date for your study.**

Any **modification** of this research project must be submitted to the IRB for review and approval, prior to implementation. Modifications include but are not limited to: changing the protocol or study procedures, changing investigators or sponsors (funding sources), including additional key personnel, changing the Informed Consent Document, an increase in the total number of subjects anticipated, or adding new materials (e.g., letters, advertisements, questionnaires). Any future correspondence should include the IRB identification number provided and the study title.

Approval letter
Page 2
White

You must promptly report any of the following to the IRB: (1) **all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.

Your research records may be audited at any time during or after the implementation of your study. Federal and University policy require that all research records be maintained for a period of three (3) years following the close of the research protocol. If the principal investigator terminates association with the University before that time, the signed informed consent documents should be given to the Departmental Executive Officer to be maintained.

Research investigators are expected to comply with the University's Federal Wide Assurance, the Belmont Report, 45 CFR 46 and other applicable regulations prior to conducting the research. These documents are on the Human Subjects Research Office website or are available by calling (515) 294-4566.

Upon completion of the project, a Project Closure Form will need to be submitted to the Human Subjects Research Office to officially close the project.

C: Professor James Pease, NREM

APPENDIX I.

**LETTER FROM IOWA STATE UNIVERSITY'S DEPARTMENT OF
NATURAL RESOURCE ECOLOGY AND MANAGEMENT TO THE
ROSEBUD SIOUX TRIBE OUTLINING INTELLECTUAL PROPERTY
AGREEMENT AND EXPLAINING SCOPE OF *PISPZA* PROJECT, OF
WHICH THIS THESIS IS PART**

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

College of Agriculture
Department of Natural Resource
Ecology and Management
359 Science II
Ames, Iowa 50011-3221
Phone 515 294 1458
FAX 515 294-2995

July 26, 2005

Dear Rosebud Sioux Tribal Council Members, Elders, and Community Members,

Greetings from Iowa State University's Department of Natural Resource Ecology and Management! The purpose of this letter is to assure the people and leaders of the Rosebud Sioux Tribe that the information being collected as part of the project entitled "Knowledge, Attitudes, and Beliefs on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed prairie dog, *Cynomys ludovicianus*)" will be used for educational purposes only and that no non-Tribal economic gain will result. This project involves community/tribal member's beliefs and overall knowledge of the Pispiza Nation, providing the opportunity for their pispiza concerns to be heard and taken into consideration by all Land Management Practices. The project is in cooperation with Albert White Hat and Lisa Colombe as tribal consultants and co-authors.

Please know that neither ISU nor my department "owns" the information – the information belongs to the people of the Rosebud Sioux Reservation. Project leader Jeanne Spaar will seek permission from all community and Tribal members whom she asks to participate. Only information from willing respondents will be included. The key to what will occur is that we (Jeanne and ISU/NREM) will maintain the highest level of respect for all community and Tribal members and will inform all potential respondents of the purpose of the study and what is planned with the information.

Once an individual consent form has been signed by a participant, any information provided is "public information." This means that the Rosebud Sioux Tribe will have all rights to the raw data, summaries, and written and oral reports. Because of the educational nature of this study, Jeanne and her major professor plan to publish summary data. This will occur only with co-authorship with one or more Tribal members and permission of the Tribe. Moreover, all data reported in a scientific/educational article to be published will be pooled – meaning that overall trends and ideas will be developed and information cannot be traced back to an individual respondent.

Before the report is considered complete a copy will be sent to each of the communities of the Rosebud Sioux Tribe to be looked over. Any and all unedited (unless editing is requested) comments submitted by interested parties related to the project and/or the information in the report will be included in the final report as an appendix. The report will also be presented to the Sinte Gleska University Review Board for their comments and approval. Each community will receive a final copy of the report, along with the Rosebud Sioux Tribe, to be used at they see appropriate.

If you have any concerns or questions, please contact me at 515. 294. 4912 or email me at: colletti@iastate.edu.

With much respect,



Joe P. Colletti, Interm Chair and Professor

APPENDIX J.
PARTICIPANT CONSENT FORMS FOR GENERAL COMMUNITY
MEMBER, ELDER, AND STUDENT

INFORMED CONSENT DOCUMENT

- Title of Study:** Knowledge, Attitudes, and Beliefs on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dog, *Cynomys ludovicianus*)
- Investigators:** Jeanne Spaur, Iowa State University graduate student in Natural Resource Ecology and Management

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to learn about community knowledge and attitudes on the Rosebud Reservation regarding the status of black-tailed prairie dogs both in Lakota culture and in the Rosebud ecosystem. You are being invited to participate in this study because you live, work, or ranch on the Rosebud Reservation.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will consist of an interview that may last up to 20 minutes. During the study you will be asked to complete an interview asking about your thoughts concerning how and where pispiza fit into Lakota culture and in the Rosebud ecosystem. You may skip any question that you do not wish to answer or that makes you feel uncomfortable.

RISKS & BENEFITS

There are no foreseeable risks at this time from participating in this study. If you decide to participate in this study there may be no direct benefit to you. It is hoped that the information gained in this study will benefit society by providing a better understanding of knowledge, attitudes and beliefs of stakeholders on the Rosebud Sioux Reservation regarding pispiza. This information can be used to develop a management plan that will better meet the needs of all concerned.

COSTS, COMPENSATION, & YOUR RIGHTS

Except for your time there will not be any costs from participating in this study. You will receive a gift of 4 seedlings in appreciation for your time. If you withdraws from participation before the interview is complete you will receive 1 seedling. Your participation in this study is completely voluntary and you may refuse to participate or to leave the study at any time. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. Project participation may be discontinued at any time without penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept strictly confidential, known only to the graduate student and her major professor and will not be made publicly available. No names will be attached to data analysis. Audio recording will be done only with your permission. Individual identification will be attached to interviews only for the purpose of follow up. All

identifying information will be destroyed on or before August 30, 2006. All data will be stored on PC in the Natural Resource Ecology and Management department, Iowa State University, and will only be accessible by major professor and graduate student PIs. When the results of the study are published no individual identities will be revealed.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact Jeanne Spaur at the Sinte Gleska University Ranch, phone 605-856-5236; Albert White Hat, Sr., PO Box 105, 150 E. 2nd St. Mission, SD, 57555, phone (605) 856-8100; or Dr. James Pease, 102 Science II Ames, IA 50011-3221, phone 515-294-7429. If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, austingr@iastate.edu, or Diane Ament, Research Compliance Officer (515) 294-3115, dament@iastate.edu.

SUBJECT SIGNATURE: Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

Subject's Name (printed) _____

(Subject's Signature)

(Date)

INVESTIGATOR STATEMENT: I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining
Informed Consent)

(Date)

ELDERS INFORMED CONSENT DOCUMENT

Title of Study: **Knowledge, Attitudes, and Beliefs on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dog, *Cynomys ludovicianus*)**

Investigators: Jeanne Spaur, Iowa State University graduate student in Natural Resource Ecology and Management

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to learn about community knowledge and attitudes on the Rosebud Reservation regarding the status of pispiza both in Lakota culture and in the Rosebud ecosystem. You are being invited to participate in this study because you have been self or community identified as a Rosebud Sioux Reservation Elder knowledgeable about pispiza.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will consist of this meeting and will last up to an hour and a half. During the study you will be asked to complete an interview asking about your thoughts regarding the status of black-tailed prairie dogs both in Lakota culture and in the Rosebud ecosystem. You may skip any question that you do not wish to answer or that makes you feel uncomfortable.

RISKS & BENEFITS

There are no foreseeable risks at this time from participating in this study. If you decide to participate in this study there may be no direct benefit to you. It is hoped that the information gained in this study will benefit society by providing a better understanding of knowledge, attitudes and beliefs of stakeholders on the Rosebud Sioux Reservation regarding pispiza. This information can be used to develop a management plan that will better meet the needs of all concerned.

COSTS, COMPENSATION, & YOUR RIGHTS

Except for your time you will not have any costs from participating in this study. You will receive a \$50.00 honorarium in appreciation for your time for each interview you complete. If you withdraw from participation before the interview is complete you will receive a \$10.00 honorarium. Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. Project participation may be discontinued at any time without penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept strictly confidential, known only to the graduate student and her major professor and will not be made publicly available. No names will be attached to data analysis. Audio recording will be done only with your permission. Individual identification will be attached to interviews only for the purpose of follow up. All identifying information will be destroyed on or before August 30, 2006. All data will be stored on PC in the Natural Resource Ecology and Management department, Iowa State University, and will only be accessible by major professor and graduate student PIs. When the results of the study are published no individual identities will be revealed.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study contact Jeanne Spaur at the Sinte Gleska University Ranch, phone 605-856-5236; Albert White Hat, Sr., PO Box 105, 150 E. 2nd St. Mission, SD, 57555, phone (605) 856-8100; or Dr. James Pease, 102 Science II Ames, IA 50011-3221, phone 515-294-7429. If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, austingr@iastate.edu, or Diane Ament, Research Compliance Officer (515) 294-3115, dament@iastate.edu.

SUBJECT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

Subject's Name (printed) _____

(Subject's Signature)

(Date)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining
Informed Consent)

(Date)

PARENT & CHILD INFORMED CONSENT DOCUMENT

Title of Study: **Knowledge, Attitudes, and Beliefs on the Rosebud Sioux Reservation Regarding Pispiza (Black-tailed Prairie Dogs, *Cynomys ludovicianus*)**

Investigators: Jeanne Spaur, Iowa State University graduate student in Natural Resource Ecology and Management

This is a research study. Please take your time in deciding if you and your child would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to learn about community knowledge and attitudes on the Rosebud Reservation regarding the status of black-tailed prairie dogs both in Lakota culture and in the Rosebud ecosystem. Your child is being invited to participate in this study because your child attends high school on the Rosebud Sioux Reservation.

DESCRIPTION OF PROCEDURES

If you and your child agree to participate in this study, your child's participation will consist of an interview that may last up to 20 minutes. During the study your child will be asked to complete an interview asking about their thoughts concerning how and where black-tailed prairie fit into Lakota culture and in the Rosebud ecosystem. Your child may skip any question that they do not wish to answer or that makes them feel uncomfortable.

RISKS & BENEFITS

There are no foreseeable risks at this time from participating in this study. If you and your child decide to participate in this study there may be no direct benefit to either of you. It is hoped that the information gained in this study will benefit society by providing a better understanding of attitudes and beliefs of stakeholders on the Rosebud Sioux Reservation regarding black-tailed prairie dogs. This information can be used to develop a management plan that will better meet the needs of all concerned.

COSTS, COMPENSATION, & YOUR RIGHTS

Except for your child's time there will not be any costs from participating in this study. Your child will receive a gift of 4 seedlings in appreciation for their time. If your child withdraws from participation before the interview is complete they will receive 1 seedling. Your child's participation in this study is completely voluntary and they may refuse to participate or leave the study at any time. Refusal to participate will involve no penalty or loss of benefits to which you or your child are otherwise entitled. Project participation may be discontinued at any time without penalty or loss of benefits to which you or your child are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept strictly confidential, known only to the graduate student and her major professor and will not be made publicly available. No names will be

attached to data analysis. Audio recording will be done only with your permission. Individual identification will be attached to interviews only for the purpose of follow up. All identifying information will be destroyed on or before August 30, 2006. All data will be stored on PC in the Natural Resource Ecology and Management department, Iowa State University, and will only be accessible by major professor and graduate student PIs. When the results of the study are published no individual identities will be revealed.

QUESTIONS OR PROBLEMS

You and your child are encouraged to ask questions at any time during this study. For further information about the study contact Jeanne Spaur at the Sinte Gleska University Ranch, phone 605-856,5236; Albert White Hat, Sr., PO Box 105, 150 E. 2nd St., Mission, SD, 57555, phone (605) 856-8100; or Dr. James Pease, 102 Science II Ames, IA 50011-3221, phone 515-294-7429. If you; have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, (515) 294-4566, austingr@iastate.edu, or Diane Ament, Research Compliance Officer (515) 294-3115, dament@iastate.edu.

PARENT OR GUARDIAN SIGNATURE: Your signature indicates that you DO NOT voluntarily agree that your child may chose to participate in this study, but that the study has been explained to you and your child, that you and your child have been given the time to read the document and that your and your child's questions have been satisfactorily answered. If you approve your child's inclusion in this study you do not have to return this form..

Parent/Guardian Name (printed) _____

(Parent/Guardian Signature)

(Date)

INVESTIGATOR STATEMENT: I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining Informed Consent)

(Date)