

ATTITUDES AND KNOWLEDGE ABOUT PRESCRIBED
FIRE OF OSAGE COUNTY, OKLAHOMA
LANDOWNERS

By

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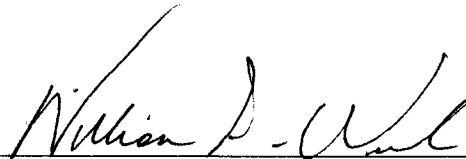
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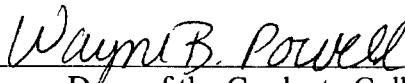

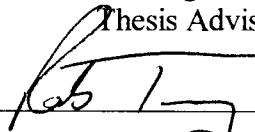
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Kurt Vonnegut once said: "when a child . . . I used to spend a lot of time rolling around on rugs with uncritically affectionate dogs we had." Vonnegut and I still do a lot of that. He pointed out that "the dogs become confused and embarrassed long before" we do.

Special thanks to Ali, Lefty, and Molly who tried not to be confused or embarrassed by me before I was finished.

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CHAPTER I

INTRODUCTION

Introduction of Man to Oklahoma

Humans arrived in Oklahoma at least 11,000 years ago. These early inhabitants of Oklahoma, known as the Paleo-Indians, traveled into North America across the Bering Bridge and into Alaska. The Paleo-Indians made their way down the melting ice corridor into what is now the continental United States. Volcanoes, windstorms, floods, and lightning fires had been shaping the landscape prior to their arrival; now the Paleo-Indians began to add their influence on the land. One way they modified their land was by using fire as a tool for agriculture and hunting. Burning after a harvest and to flush game were two of the most common early applications for fire in the plains area (Pyne, 1997*a*).

The migration patterns of these people followed the grasslands. Grasslands offered accessible food sources in an easily manipulatable environment (Pyne, 1997*a*). Grassland environments favor fire; the growing points of most grasses are at or below the ground, consequently fire does not normally kill these plants. Grasses regrow quickly after burning and this new growth is highly palatable and enriched with protein (Bolen & Robinson, 1995). The grazing animals that these early hunters lived by would therefore favor burned areas that had regrown.

Many of these early hunters stayed in Oklahoma. These early Oklahoman's continued to hunt, but also foraged for nuts, berries, sunflower seeds, and roots. Fire facilitated the harvesting of these foodstuffs and was beneficial to their way of life.

Fire has sustained and expanded grasslands from the Great Basin to the Great Plains (Pyne, 1997a). Therefore, fire, both anthropogenic and naturally occurring, has shaped the Oklahoma landscape even before written history.

The descendants of these earliest Oklahoman's are the Wichita Indians and their affiliated tribes. As direct descendants of the plains village farmers, the Wichita's are Oklahoma's oldest historical community (Baird & Goble, 1995). Oklahoma's Native Americans used fire aggressively to manage wildlife and maintain prairie openings in forested regions (Bidwell, 1993). Some Native Americans irrigated their crops; others developed alternative ways to deal with dry seasons. Since decomposition is slowed in dryer areas the agriculture in non irrigated areas depends on fire to return nutrients to the soil. Where soil fertility was low, crops and minerals could be maintained almost indefinitely by setting fires to recycle the unused debris. For early agricultural communities fire was the only practical mechanism for replacing soil nutrient losses. Fire was therefore essential to the plains Indian's non- irrigation dependent agriculture.

For 500 years the Wichita's inhabited the western part of Oklahoma without serious challengers (Baird & Goble, 1995). Eventually, during the 15th century, other native people started appearing in Oklahoma. These were the Plains Apache, Comanches, and Osages. All of these peoples used broadcast fire. They used smoke signals extensively, burned refuse to cover their trails during retreat, and baited traps with smoke to attract deer plagued by flies (Pyne, 1997a).

These early inhabitants of the grasslands used a variety of tools, including fire, to modify their environment to better suit their needs. This differs from the perception many conservationists in our society today have of the Native Americans as total "hands-off" land managers who lived in harmony with nature. Although this is partly true, Native Americans did change the land in many ways. Native Americans used fire in many ways, primarily for agriculture and during wars, to alter the land to better suit their needs.

Other peoples traveled through Oklahoma. Explorers from Norway, Spain, and France traveled to Oklahoma from the 9th century up through the 18th century. These travelers may have influenced the native peoples of Oklahoma, nonetheless, they did not have the great impact on the people or the landscape that later European settlers would have when they began arriving in Oklahoma in the 1800's. These early settlers used fire as a tool more prolifically than the Native Americans yet for many of the same purposes. The use of fire eventually slowed and almost completely stopped after the Land Rush of 1889 brought private land ownership to Oklahoma.

With the advent of private land ownership, the use of fire in Oklahoma decreased for several reasons. One reason for the decrease in burning is that the appearance of modern mechanical farming equipment encouraged farmers to plow more land and to plant on marginal acreage (Travis, 1998). This led to greater soil erosion and the loss of many acres of grassland. Poor agricultural practices and several years of severe drought combined to produce the Dust Bowl of the 1930's (Skinner & Porter, 1992). Plains grasslands had been deeply plowed and planted removing the native ground covers that had once held the soil in place. The remaining grasslands had developed under the influence of fire and had succeeded to forest lands with the suppression of fire.

This then was the land of Oklahoma, a place that evolved with fire as an integral part of its cycle. And these were the people, a mixture of European Settlers, Native Americans, and the African descendants of their slaves. A heterogeneous group who had all historically used fire yet who have all been taught to suppress fire in recent history. There is a wealth of information available about the history of Oklahoma and its people concerning fire, but limited information about how current Oklahomans regard fire.

Statement of the Problem

There is a dearth of information in the area of land owners attitudes and knowledge in regard to prescribed fires.

Purpose of the Study

The purpose of the study was to characterize the attitudes and knowledge relating to prescribed fire of landowners in Osage County, Oklahoma.

Objectives of the Study

To accomplish the purpose of the study, the following objectives were established:

1. To describe the demographics of landowners of 10 acres or more in Osage County, Oklahoma.
2. To describe the attitudes of landowners in Osage County, Oklahoma concerning prescribed fire.
3. To describe the knowledge of landowners in Osage County, Oklahoma concerning prescribed fire.
4. To determine if there is a relationship between selected characteristics and attitudes and knowledge concerning prescribed fire.

Assumptions

For the purpose of the study it was assumed that all questions were answered honestly and without aid.

Scope

The scope of the study included landowners of ten or more acres of land each in Osage County, Oklahoma.

Limitations

The results of this study are limited to landowners in Osage County, Oklahoma.

Definition of Terms

The following definitions are presented as they apply in the study.

Decomposition- The chemical breakdown of organic matter into its constituents by the action of decomposers.

Diversity- The distribution and abundance of different plant and animal communities within an area.

Ecosystem- A biological community and the physical environment associated with it.

Firebreak- A natural or man made barrier used to prevent or retard the spread of fire.

Forb- Any herbaceous plant other than those in the Gramineae, Cyperaceae, and Juncacea families.

Forage- All browse and herbaceous foods.

Grassland- An area of vegetation in which the major dominant plants are species of grasses.

Grazing Distribution- The dispersion of livestock grazing within an area.

Ground Cover - The percentage of material, other than bare ground, covering the land surface.

Hominid- Any member of the primate family Hominidae, which includes man and his fossil ancestors in the genus Homo.

Homo erectus- Once a world wide taxon; thought to be the direct ancestor of modern man.

Homo sapien- All belong to the one taxon that originated in Africa.

Homo sapien sapien- Belong to the same species as Homo sapien; was an adaptation to the warm conditions of Africa.

Litter- The upper most layer of organic debris on the soil surface.

Mulch- A layer of dead plant material on the soil surface.

Neanderthlensis- Belong to the same species as Homo sapien; was an adaptation to the icy conditions of Europe and Northern latitudes.

Nutrient- Any substance that is required for the nourishment of an organism, providing energy or structural components.

Prescribed fire- The use of fire as a management tool with at least one objective beyond control of the fire.

Rangeland- An area that is unsuited for cultivation and which provides habitat for native and domestic animals.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to describe literature relevant to the public's knowledge and attitudes concerning prescribed fires. Involved in this review were publications and journals which had applicable information to the study topic. This review is divided into the following sections: (1) History of Fire; (2) Attitudes Toward Prescribed Fire; and (3) Knowledge About Prescribed Fire

History of Fire

Formation of Oklahoma Land

A shallow sea covered the flat surface of what is now Oklahoma 400 million years ago (Baird & Goble, 1994). Approximately 100 million years later volcanoes began to erupt under this sea; these eruptions formed the mountains of Oklahoma. Over the next 250 million years basins, aquifers, swamps, and marshes cyclically developed and disappeared. Approximately 70 million years ago pressure within the earth's core began pushing the land upward and caused the sea to recede to the south. Lightening, windstorms, and rain could now be added into the equation of shaping the landscape of Oklahoma. Thus, Oklahoma has been developing under the influences of fire for over 100 million years. The first fires were probably from volcanoes erupting; later by lightening, and now by man.

Evolution of Man

Homo erectus evolved among the hominids approximately 1.6 million years ago and is believed to have captured fire shortly thereafter (Pyne, 1997*b*). It is unclear whether these early men could start their own fires or simply utilized captured fire. However, there is excavational evidence throughout Europe and Spain that these early people definitely utilized fire. Homo sapiens began replacing Homo erectus around 250,000 years ago. There were two subspecies of Homo sapiens- Neanderthensis and Sapiens. The first evidence of Homo sapiens sapiens, the African subspecies, is cave litter that is approximately 100,000 years old (Peters, 1991).

Legend has it that Prometheus delivered fire to earth in a stalk of fennel. The relationship between humans and fire goes much farther than this and has changed throughout the centuries. As stated by Pyne (1997*a*):

“It was fire as much as social organization and stone tools that enabled early big game hunters to encircle the globe and to begin the extermination of selected species. It was fire that assisted hunting and gathering societies to harvest insects, small game, and edible plants; that encouraged the spread of agriculture outside flood plains by allowing for rapid land clearing, ready fertilization, the selection of food grains, the primitive herding of grazing animals that led to domestication, and the expansion of pasture and grasslands against climate gradients.”(p. 4)

The capture of fire by humans was undoubtedly one of the events that separated humans from the other inhabitants of the planet. With the power of fire humans felt as if they were the masters of the planet. However, in more recent years there has been a great fear of fire and many of its uses. Pyne (1997*a*) also states:

“ Wildland fire protection was an invention of the industrial revolution. Its successes rested not so much on its suppression of fires as on its suppression of fire practices.”(p.100)

During World War II the Japanese government threatened to burn the Northern Pacific forests of the United States. This led the United States Forest Service (USFS) to initiate a campaign designed to convince the general public that all fires were bad. This myth that fire was the greatest enemy of the forest was reinforced for over 60 years by the use of the Smoky Bear Campaign. Dahms and Geils (1997) concluded that this was the most effective public service campaign ever waged by the USFS and the subscription to the belief that all fires are bad has resulted in the physical decline of forests and rangelands throughout the United States. Suckling (1996) states:

“ We now know with devastating certain that past mandates to eradicate fire in the US National Forests was a disaster. Today’s large fires are partially a result of that policy.” (p.1)

This not only applies to the US National Forests but also to areas such as the Tall and Short Grass Prairies. The Smoky Bear Campaign was so successful that people believed all areas needed fire suppression and if at all possible fire exclusion. Baruh (1997) states:

“ For many years Smoky Bear has proclaimed that only you could prevent forest fires, Smoky must now insist that only you could prevent forests from perishing!” (p. 6)

The Smoky Bear campaign was one of the last stages in a successful suppression of burning in the United States. Since the early 1900’s we have practiced what some have termed the grand ecological experiment, the attempted exclusion of fire in fire-adapted ecosystems (Mutch, 1994). In Oklahoma this has resulted in the decline of some native plants and animals and has facilitated the invasion of eastern red cedar and ashe juniper. Native Oklahoman species that have declined due to lack of fire in the grasslands include

but are not limited to; the greater and lesser prairie chicken, black-capped vireo, and a variety of neo-tropical and regional migrant birds (Bidwell, 1993). Gomez-Pompa and Kaus (1992) concluded:

“The concept of wilderness as the untouched or untamed land is mostly an urban perception, the view of people who are far removed from the natural environment they depend on for raw resources.” (p. 273)

The notion that some “pristine and natural” ecosystems existed in 1492 is a myth. Human’s had already been shaping the landscapes of America to best suite their needs for centuries. Fire has been shaping Oklahoma’s ecosystems from its very beginning. Understanding the uses and misuses of fire is an important part of environmental education. Fire is both natural and necessary for numerous Oklahoma ecosystems.

Fire is necessary to these and other ecosystems for a variety of reasons. Burning quickly and efficiently breaks down dead plant and animal material into particulate matter that facilitates it’s entry to soil and water thus renourishing all life in the area. Fire contains parasitic plants that would otherwise reduce the plant diversity of an area and controls plant, animal, and insect overcrowding (Peters et al., 1996).

Modern Use of Fire

Fire is necessary to many ecosystems for a variety of reasons. It quickly and efficiently breaks down dead plant and animal material into particulate matter that can easily enter soil and water thus renourishing all life in the area. Fire aids in the control invasive and non-native plants that would otherwise reduce the plant diversity of an area and controls plant, animal, and insect overcrowding.

A prescribed fire is a planned fire used as part of a comprehensive land management program. It is not a fearsome event, but simply the management of a low intensity benign fire. Temperatures within the fire increase with height above the soil

surface and rapidly decrease below the soil surface. There is virtually no temperature increase after the first 1cm of soil. Prescribed fire has many potential benefits depending on management objectives:

- Removes mulch and litter.
- Controls undesirable woody species.
- Improves the distribution of grazing by livestock.
- Increases forage availability.
- Improves nutrient quality of forage.
- Improves livestock performance.
- Improves the habitat for some endangered and threatened species such as the black capped-vireo and the red-cockaded woodpecker.
- Improves habitat for many other native species including bobwhite quail and white tail deer.

Whatever the reason for conducting a prescribed fire, it is essential to use the proper techniques.

Firing Techniques

There are several types of firing techniques. The most common are headfire, backfire, strip-head fire and flanking fire. A headfire travels in the direction of the wind and has a very rapid rate of spread. Headfires are effective in killing trees and shrubs. Headfires increase grasses and decrease forbs and low growing woody plants (Bidwell, 1993). Backfires back into the wind. They have the lowest intensity of all the firing techniques and therefore are good to use on volatile fuels. Backfires spread very slowly and can usually be suppressed with hand tools. Under less than optimum conditions such as during wind shifts, low relative humidity, or high temperatures, backfires are often the preferred firing technique. Strip headfires are a series of fires used to reduce the intensity of the headfire, and to speed up or accelerate the burn. Flanking fires are ignited and

travel at right angles to the prevailing wind. They should never be used as the only firing technique because a slight change in wind direction could transform these to a headfire.

All firing techniques require firebreaks to be constructed. A fire break is an area where there is an absence of fuel. The width of a firebreak should be 1 1/2 to 2 times the height of the fuel. Roads or natural breaks can be used as firebreaks or firebreaks can be created by dozing or blading. Fire retardant's such as Monsanto's Phoscheck can be used on fence posts or barn roofs if needed. Wet lines can also be used as a firebreak.

Season of Burn

The management objectives are what determines the season and frequency to burn. Cattle ranges would most likely receive the best effects from fire in the late spring. In the eastern 2/3 of Oklahoma the frequency of burn for best stocker cattle performance would be every year. For a cow-calf operation in the same area the frequency would be about every third year. Burning at the correct frequency provides weed control with a minimum reduction of forage production and allows for less runoff, evaporation, and erosion. Late spring burns also aid in the control of sprouting brush species.

Wildlife ranges should be burned between February and March. Early spring burns encourage many forb species, which are favored by most wildlife, to grow. Late spring burns must be finished by April 1st for regrowth to occur and sustain migratory birds. The frequency of burn for wildlife species depends on several factors including domestic livestock grazing and weather conditions.

Attitudes Toward Prescribed Fire

Manfredo, Fishbein, Haas, and Watson's (1990) study assessed attitudes toward prescribed fire policies of 391 Montana and Wyoming citizens and 522 citizens from the other 48 states. In this study approximately half of each group had positive attitudes toward prescribed fire policies. As stated by the authors:

“While biological information may provide support for a prescribed fire policy in areas managed with a preservation mandate, that alone is not sufficient justification for its implementation.”(pg. 23)

This study showed how diverse responses are about the use of prescribed fire. By confirming that only half of those studied had favorable responses to present fire usage and practices it revealed the difficulty that land managers may face when attempting to ignite a prescribed fire plan.

Taylor and Daniel's (1984) study of public education and perception of prescribed fire had participant's rate slides of forest for recreational quality and scenic quality. The participants also read brochures about fire effects. Overall, the participants supported the use of prescribed fire. They also found that the brochures increased knowledge but did not affect ratings of recreational or scenic quality. The author's state that:

“ Public attitudes about fire policy, visitors' perception of fire effects, and means of educating the public are clearly priority areas of research. Relatively little research has directly assessed public perceptions of fire and fire effects.” (p.361)

There is still little research on public attitudes about prescribed fire. Many articles state that this is an area of need, but there is little to be found. However, there is an abundance of information regarding attitudes concerning wildlife. Jackson (1982) stated:

“A well informed manager involved in debating a complex wildlife management issue needs a broad spectrum of attitudes in order to make sound judgments. He must remember that people management is an important part of wildlife management; neither management of habitats nor of populations can occur unless people do something, or if they don't do something. A conspicuous attitude bias on the part of the professional manager tends to develop strong enemies as well as strong allies.” (p. 438)

This statement clarifies not only wildlife management, but any profession that must deal with public input. Fire is an extremely complex issue; in order for a land manager to make sound judgments dealing with fire they must also have a broad spectrum of attitudes. The land manager must realize that their actions, or inaction's could effect many others. The land manager must also recognize that if attitudes are strongly held, any argument tends to intensify them (Shaw 1977).

Kellert (1980) conducted a three year study of American attitudes, knowledge and behaviors toward wildlife. He is most noted for developing a scale to describe basic perceptions of animals and the natural world. The scale consisted of 9 basic attitude classifications. Table 1 is a brief description of these attitude categories.

Table 1

Categories used to classify attitudes of the American public toward wildlife

Attitude	Identifying Terms
Naturalistic	Contact with nature
Ecologicistic	Ecosystem, species interdependence
Humanistic	Love for animals, pets
Moralistic	Ethical concern for animal welfare
Scientistic	Curiosity, study
Aesthetic	Artistic character and display
Utilitarian	Practicality
Dominionistic	Superiority
Negativistic	Dislike, indifference, fear

Kellert concludes:

“ The wildlife management field appears to be confronted by a major change in the public it serves, with many new and atypical groups becoming appropriate recipients of professional attention. This expanded constituency must inevitably constitute a threat as much as a challenge to a field that has historically defined itself in far narrower terms.” (p. 123)

This is true when dealing with fire issues as well. Many different attitudes exist about fire and fire practices. Since professionals have started to acknowledge the importance of fire in some ecosystems, it is time to get good scientific information disseminated to the public. Smoky Bear and Bambi served their inventors well, many people today still believe the lessons that were passed from the mouths of these cartoons.

Knowledge About Prescribed Fire

An understanding of how fire has shaped the Oklahoma landscape is essential for land managers. According to Mutch (1994):

“We have suppressed fires in the past to achieve valid goals for society and wildland ecosystems. The culprit in today’s problem is thus not fire suppression but the attempt at complete fire exclusion.” (p.32)

The attempt at complete fire exclusion has resulted in a change in the Oklahoma landscape. Without fire the tall grass prairie and many fire dependent ecosystems could cease to exist. Grasslands and some forests in Oklahoma are dependent on fires, without fire many plants can not complete their life cycles. Mutch (1994) also states:

“ Although managers have knowledge of fire history and effects, that information has not been applied on a landscape scale to sustain total forest health.” (p.32)

Kellert (1980) states that:

“The wildlife views of most Americans appeared to be based on limited factual understanding and awareness. Moreover, interest and concern for animals were largely confined to attractive and emotionally appealing species.” (p.123)

Land managers are faced with these same issues concerning prescribed fire. Smoky Bear and Bambi have led the class on fire related issues, and many of the lessons taught were not based on scientific information, but on emotionally appealing ideas.

Kellert (1980) goes on to conclude:

“While substantial growth in wildlife appreciation is certainly a welcome development, inadequate knowledge and an inordinately narrow perspective must also be recognized and used to form the basis for more innovative public awareness efforts.” (p.123)

Public awareness is a main concern for many land managers. Without the support of the general public many managers can not use prescribed fire. By widening the public's knowledge of prescribed fire issues there could be more support for its practice.

In 1997 Jacobson and Marynowski conducted a survey of attitudes and knowledge about ecosystem management. They surveyed 700 recreational users and 1000 local citizens. The author's found that their respondents lacked an awareness of the importance of fire to the species and ecosystem of Elgin Air Force Base, Florida. Many of these species cannot survive without the thinning and renewal cycles provided by the wildfires natural to this area. The human inhabitants of this area were clearly shown to lack knowledge of the value of fire to their ecosystem. The author's state:

“ Where traditional land managers considered education superfluous, some managers are now beginning to test and accept the use of education as a tool to meet specific natural resource goals.” (p.771)

Fire is a political, social, environmental, and personal issue. Without educating the public on matters concerning fire, wise decisions by them can not be made.

Jacobson and Marynowski (1997) concluded:

“ The importance of education is apparent as more and more environmental policy decisions are made with extensive public input. Environmentally knowledgeable and responsible natural resource users are of paramount importance in developing heightened public support for ecosystem management plans and policies.” (p.779)

In order to establish an educational plan for landowners, we first must determine and understand what their current attitudes and knowledge are. This study will determine whether landowners of Osage County, Oklahoma realize the historical role of fire in Oklahoma, the need for prescribed fire's in Oklahoma, and their opinions and concerns about current prescribed fire methods and usage.

CHAPTER III

METHODOLOGY

Introduction

The purpose of the study was to characterize the opinions and comprehension of landowners in Osage County, Oklahoma regarding prescribed fire. The study objectives were:

- 1) To describe the demographics of landowners of 10 acres or more in Osage County, Oklahoma.
- 2) To describe the attitudes of landowners in Osage County, Oklahoma concerning prescribed fire.
- 3) To describe the knowledge of landowners in Osage County, Oklahoma concerning prescribed fire.
- 4) To determine if there is a relationship between selected characteristics and attitudes and knowledge concerning prescribed fire.

Institutional Review Board (IRB)

Federal regulations and Oklahoma State University policy require review and approval of all research studies that involve human subjects before investigators can begin their research. The Oklahoma State University Office of University Research Services and the IRB conduct this review to protect the rights and welfare of human subjects involved in behavioral and biomedical research. In compliance with this policy, this study received

the proper surveillance, was granted permission to continue, and assigned approval number AG-99-016.

Population

According to the 1990 U.S. Census, Osage County, Oklahoma consists of 41,645 people. Of these 20,709 (49.7%) are male and 20,936 (50.3%) are female. There are 30,994 (74.4%) Caucasians, 6,161 (14.8%) American Indian, Eskimo or Aleuts, 4,210 (10.1%) African Americans, and 83 (0.7%) Asian or Pacific Islander and other.

Utilizing the Osage County Tax Assessor records all landowners of 10 acres or more in Osage County, Oklahoma were identified. The Tax Assessor records consist of 17 books of landowners and all tax information. The books are set up by section, township, and range (STR). Name, mailing address and taxable land information was taken from these records.

Sample

Sampling was systematic by book-marking every 10th page of the Osage County Tax Assessor record books. The landholders on these pages were then evaluated by amount of taxable land. If the taxable land consisted of 10 acres or more, the owners name, mailing address, and amount of land taxed was recorded for use in the study. These landowners were then assigned a number for confidentiality and administered a questionnaire by mail (Dillman, 1978). If taxable land was less than 10 acres, or the land did not have an owner listed, the information was discarded and not included in the study. When a selected page did not contain any landowners that fit into the sample profile of landowners of 10 acres or more, no information was taken from the page. There are no records to indicate how many landowners of 10 acres or more exist in Osage County.

There are 18,000 home owners in Osage County. Estimating that 2000 of these home owners have 10 acres or more, Krejcie and Morgan indicate that 322 responses are required for a 95% confidence interval. Table 2 shows that land ownership size ranged from 10 acres to 900 acres. The mean amount of land taxed was 111.09 acres with a median of 51.5 acres, and mode of 40 acres.

Table 2

Distribution of respondents by land ownership

Land (in acres)	Number of Respondents	Percentage
10-80	160	59.48
81-160	60	22.30
161-320	24	8.92
321-640	11	4.09
641>	6	2.24
Unknown	8	2.97
Total	269	100.00

The sample of this study consisted of 396 landowners listed in the Osage County Tax Assessor records as owning at least 10 acres in Osage County, Oklahoma. The population consisted of men and woman of different ethnic backgrounds including Caucasian, African American, and American Indian. The population was purposeful in that Osage County, Oklahoma does the most prescribed burning in the state (Engle, Bidwell, & Moseley, nd).

Instrument Development

The questionnaire was adapted from a similar study conducted by Jacobson and Marynowski (1995). The revised questionnaire was reviewed by faculty in Range Science and Agricultural Education at Oklahoma State University. A pilot test of the survey was not deemed necessary since the questionnaire was largely adapted from previous studies. Modifications to the survey were derived following a review of literature of past evaluation studies and instruments used in related studies.

The questionnaire was divided into three sections: attitudes about prescribed fire, determination of subject knowledge of prescribed fire, and demographics. Attitude questions were designed around a 5-point scale (1 = completely agree to 5 = completely disagree), with a central neutral category (Dillman, 1978). Knowledge questions were designed to measure familiarity using a true-false format (McDonough & Lee, 1990).

Collection of Data

The questionnaire was reproduced on light blue paper and included a return postage paid envelope (Appendix B). A cover letter explaining the study and asking for participation was also included (Appendix B). Each envelope was hand addressed by the researcher and mailed in envelopes provided by the Oklahoma Cooperative Extension Service (Key, 1998). This packet was mailed to each of the landowners in early February, 1999. Responses to the survey were tracked by assigning each addressee a number and recording that number on the stamped self-addressed envelope that was included in the sample packet. Upon receipt of a completed questionnaire in the aforementioned numbered envelopes the respondents anonymity was protected by removing the survey from the envelope and marking only that a response was received from the address that corresponded to the number on the envelope.

Following the first mailing, the Post Office returned 16 (4.04%), completed questionnaires were received from 202 participants (53.15%). One month later a second questionnaire packet was sent to all who had not yet responded. The second mailing yielded an additional 55 completed questionnaires (14.47%). Completed surveys were received from a total of 257 landowners (68.16%). In order to determine that the remaining 31.84 % of the population did not vary significantly from the respondents, non-respondents were “double-dipped”. A random sample of 10 % (n= 12) of the non-respondents was drawn (Miller & Smith, 1983). Telephone interviews were then conducted to obtain data on the non-respondents in the sample using the questionnaire as an interview schedule. A t-test analysis revealed no significant difference in rating of attitudes and knowledge of prescribed fire scores between the respondent and non-respondent groups. The phone interview data from the non-respondent group was therefore pooled with the respondent group; this data added an additional 12 questionnaires for an overall response rate of 70.78% (n = 269).

Response rates were calculated using the formula:

$$\text{Response rate} = \frac{\text{number returned}}{\text{number in sample} - \text{undeliverable}} \times 100$$

Table 3. Response Rate.

	N of Respondents	% of Total Respondents	% of Sample
First Mailing	202.00	75.09	53.15
Second Mailing	55.00	20.45	14.47
Phone Interview	12.00	4.46	3.16
Total	269.00	100.00	70.78

Analysis of Data

The demographic data was analyzed using frequencies and percentages and reported in the aggregate. Knowledge and attitude data from the survey was then analyzed using descriptive and inferential statistics including frequency distributions and percentages. Significance is reported at the $p \leq 0.05$ level. Attitude statements were measured on a scale of 1 (completely agree) to 5 (completely disagree).

Table 4. Attitude scale of measurement.

Attitude	Scale
Completely Agree	1.00-1.50
Agree	1.51-2.50
Neutral	2.51-3.50
Disagree	3.51-4.50
Completely Disagree	4.51-5.00

Knowledge scores were based on percentage. A score of 70% was used as the lowest score for having knowledge in a subject area. Question three of the knowledge section, "Complete suppression of forest and rangeland fires would reduce habitat for such animals as white tailed deer", was determined to be unclear upon examination of the responses. Therefore this question was removed from the survey. All findings were reported in the aggregate.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this chapter was to present data that were collected to measure the attitudes and knowledge of Osage County landowners concerning prescribed fire. The data are organized according to and corresponding with the objectives of the study. Although demographics was not an objective of this study, these findings will be reported at the beginning of this chapter.

The purpose of this study was to characterize the attitudes and knowledge relating to prescribed fire of Osage County, Oklahoma landowners. Specific objectives of the study were as follows:

1. To describe the demographics of landowners of 10 acres or more in Osage County, Oklahoma.
2. To describe the attitudes of landowners in Osage County, Oklahoma concerning prescribed fire.
3. To describe the knowledge of landowners in Osage County, Oklahoma concerning prescribed fire.
4. To determine if there is a relationship between selected characteristics and attitude and knowledge concerning prescribed fire.

Findings Related To Objective One

The first objective of the study was to determine the demographics of landowners of 10 acres or more in Osage County, Oklahoma. Demographics examined by this study included: gender, age, highest education level completed, and ethnicity.

As shown in Table 5, there were 27.5% (n=74) female respondents compared to 72.5% (n= 195) male respondents.

Table 5

Distribution of respondents by gender

Gender	N of Respondents	% of Respondents
Female	74.0	27.5
Male	195.0	72.5
Total	269.0	100.0

Data in Table 6 shows that the majority of the respondents were Caucasian 79.02% (n=212), the remainder were American Indian 16.01% (n=42), South Asian .01% (n=1), and African American .01% (n=1). There were 13 (4.94%) respondents who did not answer this question.

Table 6

Distribution of respondents by ethnicity

Ethnicity	N of Respondents	% of Respondents
Caucasian	212.00	79.03
Native American	42.00	16.01
African American	1.00	0.01
South Asian	1.00	0.01
No Response	13.00	4.94
Total	269.00	100.00

Data in Table 7 shows the age of the respondents had a range of 27-94, with a mean of 58.1 years; median and mode are both 58 years. There were 13 subjects who did not report their age.

Table 7

Distribution of respondents by age

Age	Number	Percentage
<40	33	12.27
41-50	41	15.24
51-60	83	30.86
61-70	49	18.22
71-80	31	11.52
81-90	16	5.95
91>	3	1.12
No Response	13	4.82
Total	269	100.00

Table 8 shows education levels ranged from 6th grade to a Ph.D. with a mean of 14.09 years, median of 14 years and mode of 12 years. There were 9 subjects who did not answer this question.

Table 8

Distribution of respondents by highest education level completed

Education (in years)	Number of Respondents	Percentage
6-11	9	3.35
12	111	41.26
13-14	40	14.87
15-16	69	25.65
17-18	15	5.58
19-20	16	5.95
No Response	9	3.35

Findings Related To Objective Two

The second objective of the study was to describe the attitudes of Osage County landowners concerning prescribed fire. As shown in Figure 1, 26.3% of respondents completely agree with the statement "Oklahomans should use prescribed fire despite potential air pollution"; 40.52% agree, 3.72% completely disagree, 8.55% disagree, 19.33% were neutral, and 1.49% had no response. The mean was 2.19 (Agree) with a

median and mode of 2 (Agree). Therefore well over half (66.82%) agreed or completely agreed, with 20.82% neutral or no response and only 12.27% disagreed with this statement.

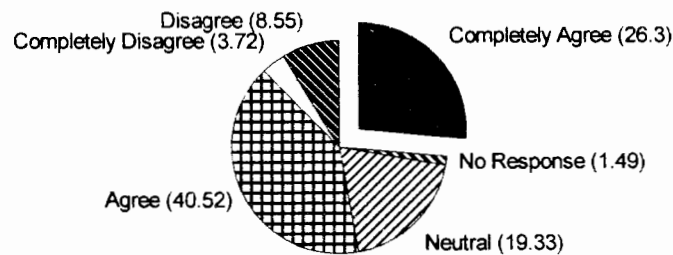


Figure 1

Distribution of respondents who believe more Oklahomans should use prescribed fire despite potential air pollution.

Figure 2 shows that 32.34% of respondents agree that more areas of Oklahoma should be prescribed burned to increase wildlife habitat, 14.5% completely agree, 7.43% completely disagree, 20.81% disagree, 23.42% are neutral, and 1.49% did not respond. The percentage of those who agree or completely agree with the use of prescribed fire to increase wildlife habitat is 46.84%, neutral or no response was 24.91%, and almost 30% (28.3) disagreeing. The mean was 2.73 (Neutral) with a median of 3 (Neutral) and mode of 2 (Agree).

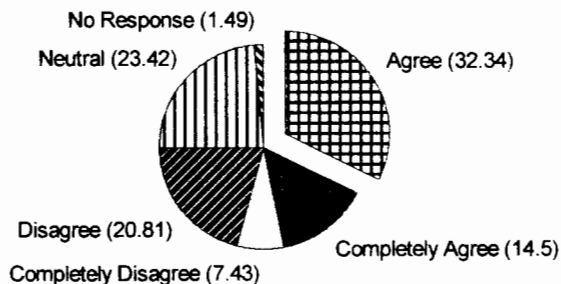


Figure 2

Distribution of respondents who believe more areas of Oklahoma should be prescribed burned to increase wildlife habitat.

Figure 3 shows that 11.15% of respondents agree that prescribed fire destroys scenery, 4.09% completely agree, 19.33% completely disagree, 46.84% disagree, 16.73% were neutral, and 1.85% no response. The mean was 3.67 (Disagree), with a median and mode of 4 (Disagree). Most respondents disagreed (66.17%) with the statement that prescribed fire destroys scenery, 15.24% agreed, and 18.58% were neutral or had no response.

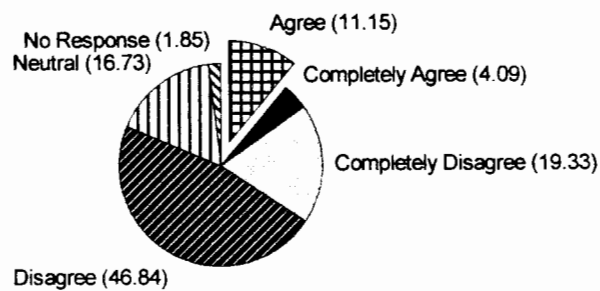


Figure 3

Distribution of respondents who believe prescribed fire destroys scenery.

Figure 4 shows that 12.64% of the respondents agreed that prescribed fire causes a threat to human life, 3.35% completely agree, 23.42% completely disagree, 46.09% disagree, 12.64% neutral, and 1.85% no response. Therefore, 69.51% disagreed with the statement, 16% agreed, and 14.49% were neutral or had no response. The mean was 3.76 (Disagree), with a median and mode of 4 (Disagree).

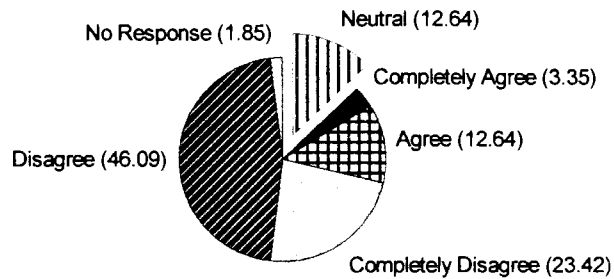


Figure 4

Distribution of respondents who believe prescribed fire causes a threat to human life.

Figure 5 shows that 44.24% of respondents agree that fire is beneficial to Oklahoma native plants and trees, 24.54% completely agree, 4.46% completely disagree, 10.78% disagree, 14.49% neutral, and 1.49% no response. 68.78% of the respondents agreed with the statement, 15.38% disagreed, and 15.98% were neutral or had no response. The mean was 2.24 (Agree), with a median and mode of 2 (Agree).

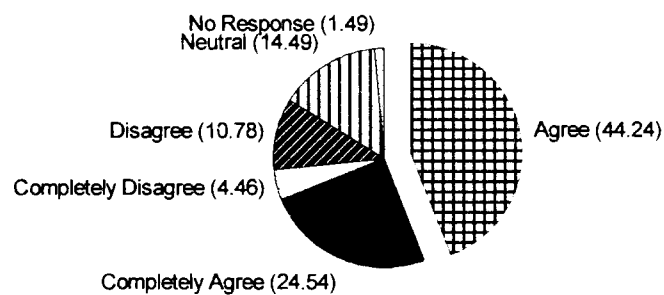


Figure 5

Distribution of respondents who believe fire is beneficial to Oklahoma native plants and trees.

Figure 6 shows 10.41% of respondents agree that prescribed fire causes most animals to lose their homes, 4.46% completely agree, 52.04% disagree, 17.1% completely disagree, 14.49% neutral, and 1.49% no response. Therefore, 69.14% of the respondents disagreed with the statement, 14.87% agreed, and 15.98% were neutral or had no response. The mean was 3.68 (Disagree), with a median and mode of 4 (Disagree).

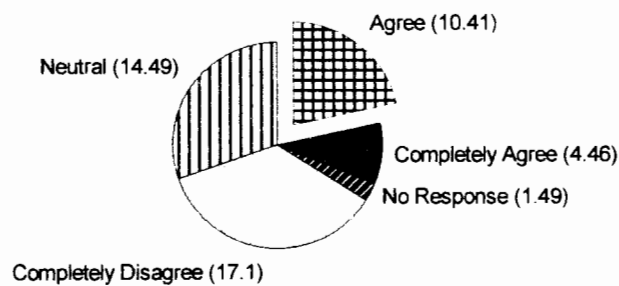


Figure 6

Distribution of respondents who believe prescribed fire causes most animals to lose their homes.

Overall attitude attitudes varied. Most respondents agree with prescribed fire practices. The overall mean attituded concerning prescribed fire was 2.36 (Agree), with a median of 2.3 (Agree), and mode of 2 (Agree). Table 9 shows the overall responses for each attitude statement.

Table 9

Attitude statements response and percentage

Attitude Statement	Completely Agree		Agree		Neutral		Completely Disagree		Disagree		Overall Scaled 1-5
	N	%	N	%	N	%	N	%	N	%	
1. Oklahoman's should use prescribed fire despite potential air pollution.	71	6.3	109	40.6	52	19.3	10	3.71	23	8.5	2.19 (Agree)
2. More areas of Oklahoma should be prescribed burned to increase wildlife habitat.	39	14.5	87	32.3	63	23.4	20	7.4	56	20.8	2.73 (Neutral)
3. Prescribed fire destroys scenery.	11	4.1	30	11.2	45	16.7	52	19.3	126	46.8	3.67 (Disagree)
4. Prescribed fire causes a threat to human life.	9	3.4	30	12.6	34	12.6	63	23.4	124	46.1	3.76 (Disagree)
5. Fire is beneficial to Oklahoma native plants and animals.	66	24.5	119	44.2	39	14.5	12	4.5	29	10.8	2.22 (Agree)
6. Prescribed fire causes most animals to lose their homes.	12	4.5	28	.4	39	14.5	46	17.1	140	52.0	3.68 (Disagree)

Findings Related To Objective Three

Objective three of the study was to describe the knowledge of landowners in Osage County, Oklahoma about prescribed fire.

Data in Figure 7, shows that 91.44% (n=246) of respondents answered correctly the question of prescribed fire usually results in the death of the majority of animals in an area. 8.55% (n=23) of respondents answered the question incorrectly.

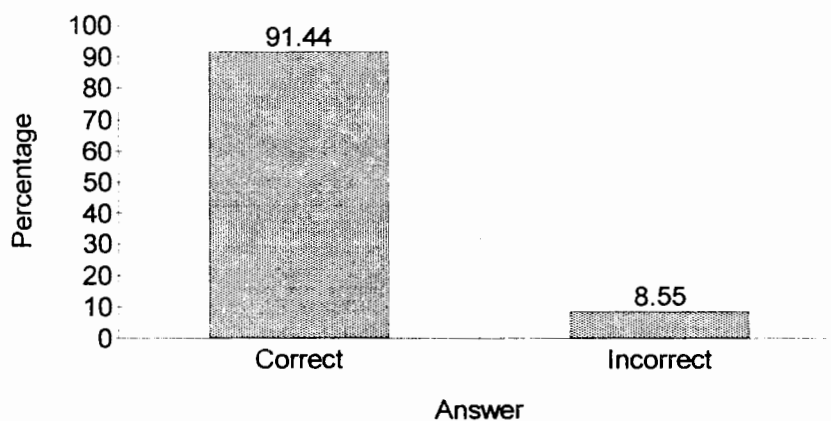


Figure 7

Distribution of respondents knowing that the majority of animals in an area do not die from prescribed fire.

Figure 8 shows that 89.21% (n=240) of respondents know that prescribed fire can be used to control some disease and insects.

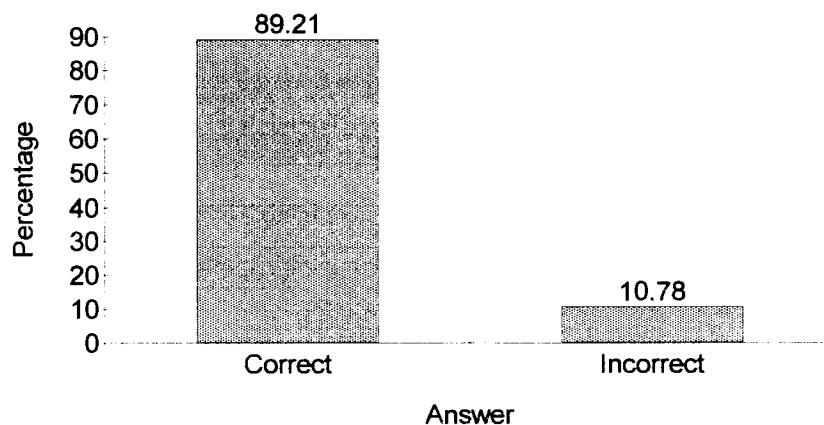


Figure 8

Distribution of respondents who know that prescribed fire can be used to control disease and insects.

Data in figure 9 shows that 84.38% (n=227) answered correctly that fire benefits Oklahoma's native forests, shrublands, and prairies.

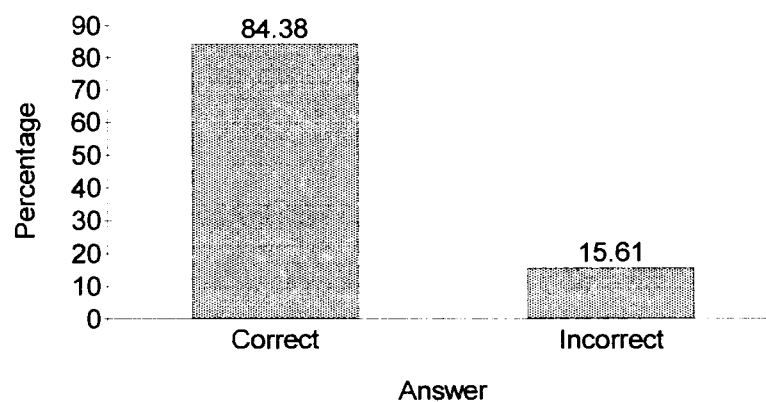


Figure 9

Distribution of respondents knowing that fire benefits Oklahoma's native forests, shrublands, and prairies.

Figure 10 shows that 60.59% (n=163) answered correctly that some plants in Oklahoma require fire in order to complete their life cycles.

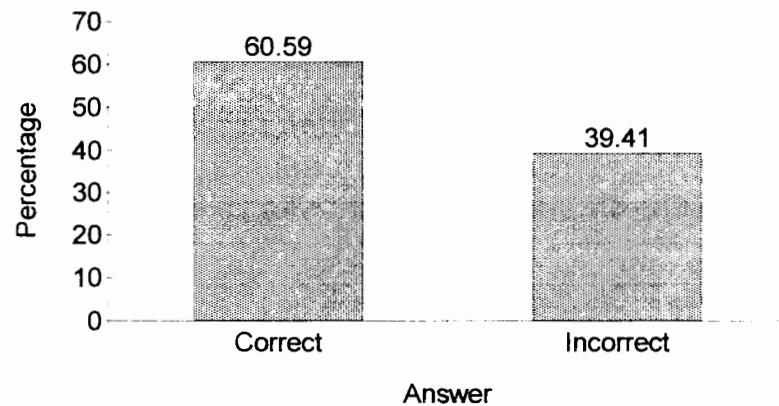


Figure 10

Distribution of respondents knowing that some plants in Oklahoma require fire to complete their life cycles.

Data in Figure 11, shows that 69.51% (n=187) of respondents answered correctly that the use of prescribed fire does reduce the potential for wildfires.

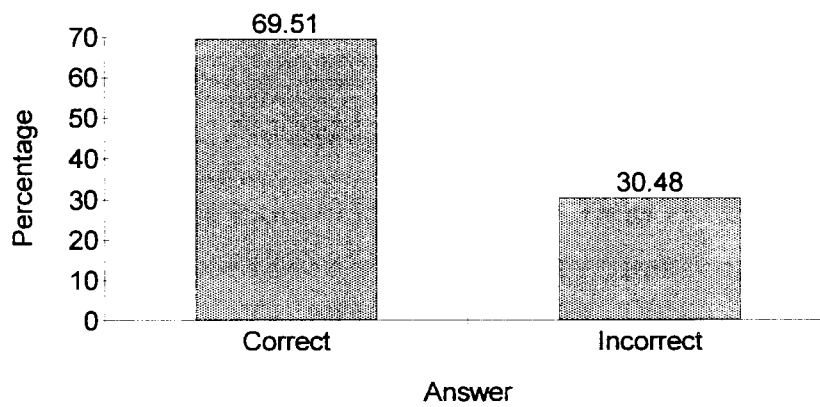


Figure 11

Distribution of respondents knowing that the use of prescribed fire reduces potential for wildfires.

Data in Figure 12, shows that 73.97% (n=199) of respondents know that prescribed fire does not destroy habitat for Oklahoma endangered and threatened species such as the red-cockaded woodpecker.

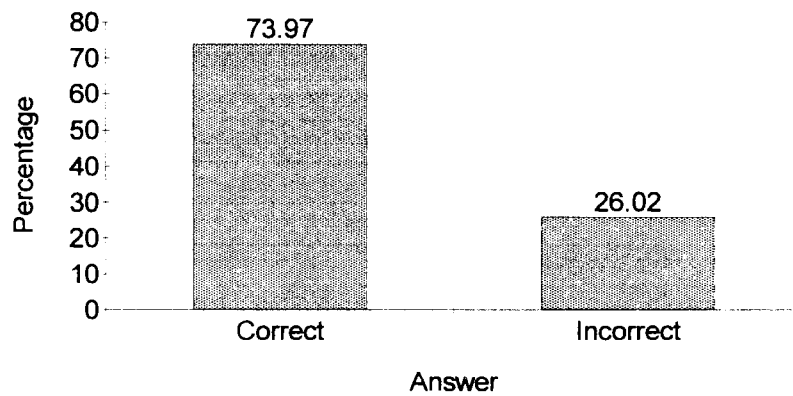


Figure 12

Distribution of respondents knowing that prescribed fire does not destroy habitat for Oklahoma endangered and threatened species such as the red-cockaded woodpecker.

Knowledge sections of the survey were divided into True or False. Several respondents wrote in that they did not know an answer; this was reported as an incorrect answer. Table 10 is an overview of overall knowledge scores.

Table 10

Overview of overall knowledge scores

<i>Question</i>	<i>n</i>	<i>% Correct</i>	<i>n</i>	<i>% Incorrect</i>
1. Prescribed fires usually result in the death of the majority of animals in the area.(False)	246	91.44	23	8.55
2. Prescribed fires can be used to control disease and insects.(True)	240	89.21	29	10.78
3. Fire benefits Oklahoma's native forests, shrublands, and prairies.(True)	227	84.38	42	15.61
4. Some plants in Oklahoma require fire in order to complete their life cycles.(True)	163	60.59	106	39.41
5. The use of prescribed fire does not reduce the potential for wildfires.(False)	187	69.51	82	30.48
6. Prescribed fire destroys habitat for Oklahoma endangered and threatened species such as the red-cockaded woodpecker.(False)	199	73.97	70	26.02

* Average overall knowledge score was 4.6 (76%).

Findings Related To Objective Four

Objective four of the study was to determine if there was a relationship between demographics and attitude and knowledge concerning prescribed fire. Correlation coefficients were calculated for: overall attitude and age, land, knowledge, and education level. There was no correlation between attitudes and age, amount of land, or education level. There was a moderate correlation between overall knowledge scores and overall attitude (-0.519), those with higher knowledge scores expressing more positive attitudes about prescribed fire. Table 11 shows the correlation scores for attitude.

Table 11

Correlation between attitudes and age, land, overall knowledge, and highest education level

Factor	Correlation
Age	0.0610
Amount of Land	-0.0090
Overall Knowledge	-0.519*
Highest education level	-0.0070

*p<0.05.

Attitudes toward prescribed fire were uniformly agreeable across all ethnicities. A t-test was conducted and revealed no relationship between attitudes toward prescribed fire and ethnicity. An ANOVA was conducted and revealed no significant difference between gender and attitudes toward prescribed fire.

Correlation coefficients were also calculated between overall knowledge and age, amount of land, and highest education level. There was no correlation between overall knowledge and age, amount of land, and highest education level. Table 12 shows the correlation scores for knowledge.

Table 12

Correlation between overall knowledge and age, land, and highest education level

Factor	Correlation
Age	-0.150
Amount of Land	0.070
Highest Education Level	0.170

A t-test revealed no significant difference between ethnicity and overall knowledge. An ANOVA showed no significant difference between gender and knowledge concerning prescribed fire

Comments

The survey contained a final section labeled simply "comments". Respondents were free to write anything in this blank space. There were 77 (28.6%) respondents who provided statements in this section (Appendix C). Most comments could be grouped into four categories: comments on frequency of fires, comments about wildlife, comments about liability, and comments directed toward the researcher.

Many respondents were concerned about the frequency with which Osage County landowners currently use prescribed fires. Examples of comments in this area were:

1. I don't know much about this subject. I do think burning every year like most people in Osage do is too often. I think it is better every two years. It gives grass more growth and kills brush better. I try to burn every other year.
2. As a land owner I use prescribed fire two times a year; spring and fall to reduce potential loss from wild fire.
3. Prescribed fire should be 3-5 years each. Educational efforts about prescribed fire should be sent to each land owner.

Other respondents commented on wildlife issues. The comments varied dramatically. Examples of comments on wildlife included:

1. We have used controlled fire for years- primarily on hay meadows- every other year and bluestem and woods pastures. These fires are particularly helpful in tick control and most buildup in woods. Wildlife temporarily leave the area but return again soon. We notice white tail deer in the burned area almost as soon as the area cools down.
2. We have used prescribed burning the past three years and I feel we have increased the wildlife population by at least 50%, also we have very few ticks.

3. Animal rights people, need to stay out of ranchers business, we have a hard enough time making a living as it is. We don't need to be worried about the red-cockaded woodpecker, their will be enough trees and telephone poles for them.

Some respondents were mostly concerned with accountability and liability.

Examples of comments related to liability and accountability were:

1. Liability is the major detriment to prescribed burns on my ranch.
2. I think prescribed burning is fine, provided the fire is kept under control and supervised by knowledgeable people. Every year our property is threatened by fires that nearby ranchers light but fail to control properly.

Some comments were directed to the researcher. There were a variety of these comments including:

1. What does race have to do with my knowledge/attitude on controlled fires?
2. Good Luck.
3. Jesus saves (included assorted pamphlets).

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of the study was to describe the knowledge and attitudes about prescribed fire of Osage County, Oklahoma landowners. The objectives of the study were:

1. To describe the demographics of landowners of 10 acres or more in Osage County, Oklahoma.
2. To describe the attitudes of landowners in Osage County, Oklahoma concerning prescribed fire.
3. To describe the knowledge of landowners in Osage County, Oklahoma concerning prescribed fire.
4. To determine if there is a relationship between selected characteristics and attitude and knowledge concerning prescribed fire.

For the purpose of this study the following assumptions were made:

That the questions were answered honestly and without aid.

The population of this study consisted of approximately 4000 landowners of 10 or more acres in Osage County, Oklahoma, the sample of the study consisted of 396 landowners. Osage County was chosen because it has the least eastern red cedar invasion and the most prescribed burning in Oklahoma.

Summary and Findings

Findings Related to Objective One

The first objective of the study was to describe the demographics of landowners of 10 acres or more in Osage County, Oklahoma. The demographics show that the respondents gender was 27.5% female, and 72.5% male. The respondents were 79.02% Caucasian, 16.01% Native American, .01% African American, 01% South Asian, and 4.94% unknown. The age of the respondents ranged from 27-94, with a mean age of 58.1 years. Education levels ranged from 6 years of formal education to 20 years, with a mean of 14.09 years. Acres of land owned had a range of 10 to 900 acres, with a mean of 111.09 acres. Table 13 shows the demographics of the typical respondent.

Table 13

The typical respondent profile

Category	Respondent
Gender	Male
Ethnicity	Caucasian
Age	58.10 years
Education Level	14.09 years
Land	111.09 acres

Findings Related to Objective Two

Objective two of the study was to describe the attitudes of landowners in Osage County, Oklahoma concerning prescribed fire. Overall attitudes varied. Most respondents agree with prescribed fire practices. Table 14 shows the overall mean attitude scores of respondents.

Table 14

Average Attitude Statements

<u>Attitude Statement</u>	<u>Overall</u>
1. Oklahoman's should use prescribed fire despite potential air pollution.	2.19 (Agree)
2. More areas of Oklahoma should be prescribed burned to increase wildlife habitat.	2.73 (Neutral)
3. Prescribed fire destroys scenery.	3.67 (Disagree)
4. Prescribed fire causes a threat to human life.	3.76 (Disagree)
5. Fire is beneficial to Oklahoma native plants and animals.	2.22 (Agree)
6. Prescribed fire causes most animals to lose their homes.	3.68 (Disagree)
*Average overall attitude.	2.36 (Agree)

Findings Related to Objective Three

Objective three of the study was to describe the knowledge of Osage County, Oklahoma land owners concerning prescribed fire. Overall knowledge scores had a mean of 4.6 (76%). Table 15 shows knowledge scores for each question.

Table 15

Overview of knowledge scores

Knowledge Statement	n	% Incorrect
1. Prescribed fires usually results in the death of the majority of animals in an area. (False)	23	8.55
2. Prescribed fires can be used to control disease and insects. (True)	29	10.78
3. Fire benefits Oklahoma's native forests, shrublands, and prairies. (True)	42	15.61
4. Some plants in Oklahoma require fire in order to complete their life cycles. (True)	106	39.41
5. The use of prescribed fire does not reduce the potential for wildfires. (False)	82	30.48
6. Prescribed fire destroys habitat for Oklahoma endangered and threatened species such as the red-cockaded woodpecker. (False)	70	26.02

*Average overall knowledge score was 4.6 (76%).

Findings Related to Objective Four

Objective four of the study was to determine if there was a relationship between demographics and attitude and knowledge concerning prescribed fire. There was no significant correlation found between overall attitude or knowledge and age, amount of land owned, or education. There was a moderate correlation between overall knowledge scores and overall attitude (-0.519). Table 16 shows the correlation scores between attitude and knowledge and age, land, and education. There was no significant differences found between attitudes and knowledge with ethnicity or gender.

Table 16

Correlation between attitude and knowledge with demographic information

Factor	Correlation with Attitude	Correlation with Knowledge
Age	0.061	-0.15
Amount of Land	-0.009	0.07
Highest Education Level	-0.007	0.17
Knowledge	-0.519*	n/a

*p<0.05.

Conclusions

Based on the on the information received from the questionnaire, the analysis of the questions, and the assumptions made at the beginning of the survey, the following conclusions were made.

Conclusions Relating to Objective One:

1. The typical landowner of 10 acres or more in Osage County, Oklahoma is middle aged and male.
2. He is Caucasian and owns approximately 112 acres.
3. He is also very educated, with the average education level being 14 years of school.

Conclusions Relating to Objective Two:

1. Landowners in Osage County have positive attitudes towards prescribed fire practices.
2. Landowners believe that Oklahomans should use prescribed fire despite potential air pollution.
3. Landowners are indeterminate concerning more areas of Oklahoma being prescribed burned to increase wildlife habitat, and dissented to prescribed fire causing most animals in an area to lose their homes.
4. Landowners believe that prescribed fire is beneficial to Oklahoma native plants and trees.
5. Landowners do not think that prescribed fire destroys scenery.

Conclusions Relating to Objective Three:

1. Landowners are knowledgeable in relation to most issues pertaining to prescribed fire.
2. Landowners appreciate that prescribed fires do not kill the majority of animals in an area.
3. Landowners appreciate that prescribed fires can be used to control disease and insects.
4. Landowners comprehend that fire benefits Oklahoma's native forests, shrublands, and prairies.
5. Landowners are unaware that some plants in Oklahoma require fire to complete their life cycle.
6. Landowners are not cognizant that the use of prescribed fire reduces the potential for wildfire.
7. Landowners perceive that prescribed fire does not destroy habitat for Oklahoma endangered and threatened species such as the red-cockaded woodpecker.

Conclusions Relating to Objective Four:

1. There appears to be no correlation between attitudes and age, education level, and amount of land ownership.
2. There is no relationship between attitude and gender or ethnicity.
3. There is no correlation between knowledge and age, education level, and amount of land ownership.
4. There is no relationship between knowledge and gender or ethnicity.

5. There is a moderate correlation between attitudes and knowledge. Landowners have more positive attitudes concerning prescribed fire as their knowledge of prescribed fire issues increases.

Recommendations

Based on the previous findings, the following recommendations are made for consideration:

1. Land owners need to be educated on the benefits and limitations of prescribed fire. The overall attitudes of landowners in Osage County are very positive but many seemed not to know that there are good as well as bad things about fire.
2. Landowners need to be educated about native Oklahoma plant life cycles.
3. Education efforts should target landowners knowledge base and not try to convince them that all fires are good or bad.

Recommendations for Additional Research

1. A similar study of landowners at the urban/wild land interface should be conducted to determine if there is a difference between urban and rural landowners.
2. A similar study of other counties in Oklahoma should be conducted to determine if landowners in Osage County, Oklahoma have more positive attitudes than other landowners.
3. A study should be done on natural resources and their importance.

BIBLIOGRAPHY

Baird, W., & Goble, D. (1994). The story of Oklahoma. University of Oklahoma Press; Norman, Oklahoma.

Bidwell, T.G. (1993). Using prescribed fire in Oklahoma. Oklahoma State University Extension Service. Circular E-927.

Bolen, E., & Robinson, W. (1995). Wildlife ecology and management. 3rd edition. Prentice Hall, Inc. Englewood Cliffs, New Jersey.

Census, US (1990). 1990 US census data. Database: C90STF3A.

Dahms, C., & Geils, B. (1997). An assessment of forest ecosystem health in the southwest. Federal Report RM-GIR-295. Fort Collins, Colorado. US Department of Agriculture.

Dillman, D.A. (1978). Mail and telephone surveys: the total design method. John Wiley & Sons, Inc. New York, Toronto, Brisbane.

Ellis, L. (1994). Research methods in the social sciences. Madison, Wisconsin: Brown and Benchmark Publishers.

Engle, D.M., & Bidwell, T.G., & Moseley, M.E. (ND). Invasion of Oklahoma rangelands and forests by Eastern Redcedar and Ashe Juniper. Stillwater, Oklahoma: Oklahoma Cooperative Extension Service.

Gomez-Pompa, A., Kaus, A. (1992). Taming the wilderness myth. BioScience 42(4):271-279.

Jackson, J. J. (1982). Public support for nongame and endangered wildlife management: Which way is it going? Transactions of the North American Wildlife and National Resources Conference 47:432-440.

Jacobson, S., & Marynokowski, S. (1997). Public attitudes and knowledge about ecosystem management on Department of Defense land in Florida. Conservation Biology 11(3): 770-781.

- Kellert, S.R. (1980). American's attitudes and knowledge of animals. Transactions of the 45th North American Wildlife and Natural Resources Conference 45:111-124.
- Key, J. (1998). AGED 5980 research design. Oklahoma State University, Stillwater Oklahoma.
- Manfredo, M., & Fishbein, M., & Hass, G., & Watson, A. (1990). Attitudes toward prescribed fire policies. Journal of Forestry. 88:19-23.
- McDonough, M.H., & Lee, T. (1990). Evaluation of interpretive services: what do we know in 1990? D.L. Kulhavy and M.H. Legg, editors. Proceedings of the 1990 National Association of Interpreters Workshop. National Association of Interpretation Publication, Fort Collins, Colorado.
- Miller, L.E., & Smith, K.L. (1993). Handling nonresponse issues. Journal of Extension. September/October: 45-50.
- Mutch, R. (1994). Fighting fire with prescribed fire: a return to ecosystem health. Journal of Forestry. 92: 31-33.
- Peters, D. (1991). From the beginning- the story of human evolution. William Morrow and Co., Inc.; New York, New York.
- Pyne, S. (1997a). Fire in America-a cultural history of wildland and rural fire. University of Washington Press; Seattle and London.
- Pyne, S. (1997b). Vestual fire- an environmental history , told through fire, of Europe and Europe's encounter with the world. University of Washington Press; Seattle and London.
- Shay, R.E. (1977). A sociological theory related to wildlife management. Wildlife Society Bulletin 5(1):19-24.
- Skinner, B., & Porter, S. (1992). The dynamic earth- an introduction to physical geology. 2nd Edition. John Wiley and Sons, Inc.; New York, New York.
- Suckling, K. (1996). Fire and forest ecosystem health in the American Southwest. Southwest Forest Alliance. Southwest Center for Biological Diversity.
- Taylor, J.G., & Daniel, T. (1984). Prescribed fire: public education and perception. Journal of Forestry. 82:3610365.

Travis, R. (1998). The Texas dust bowl in historical perspective: what happened and could it happen again? Unpublished dissertation. Baylor University; Waco, Texas.

Witter, J.W., & Shaw, W.W. (1979). Beliefs of birders, hunters, and wildlife professionals about wildlife management. Transactions of the 44th North American Wildlife and Natural Resources Conference 44:298-3-5.

APPENDIXES

APPENDIX A

IRB APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

DATE: 02-02-99

IRB #: AG-99-016

**Proposal Title: AN ASSESSMENT OF ATTITUDES AND KNOWLEDGE
ABOUT PRESCRIBED FIRE OF OSAGE COUNTY, OKLAHOMA
LANDOWNERS**

Principal Investigator(s): Bill Weeks, Karen Michelle Carter

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature:



Date: February 2, 1999

Carol Olson, Director of University Research Compliance
cc: Karen Michelle Carter

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

APPENDIX B

COVER LETTER AND QUESTIONNAIRE

**College of Agricultural Science
and Natural Resources**

Oklahoma State University
448 Agricultural Hall
Stillwater, Oklahoma 74078-6031

Phone (405)-744-5129
Home Phone (405) 773-4299
Email roxann@ionet.net

February 09, 1999

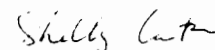
Dear Landowner,

I am a student at Oklahoma State University and in order to meet my graduation requirements I have to design and conduct a research experiment. I need your help to determine the knowledge and attitudes about prescribed fire of Osage County, Oklahoma landowners. Many people are concerned with educational efforts about prescribed fire and how these efforts can be improved. However, little is known about landowners current knowledge or attitudes on the subject. Therefore, you were randomly selected from the Osage County Landowner Records to take part in this anonymous survey of Knowledge and Attitudes about prescribed fire. Results from the survey will help determine needs of educational programs and aid in setting environmental educational goals.

I need your help. Enclosed is a copy of the questionnaire that will be used in the study. Please take the time to complete the questionnaire and return it in the enclosed self-addressed stamped envelope. It would be very helpful to have your completed questionnaire returned to me by March 10, 1999.

Your responses are confidential. No names or individual information will be used or released to anyone. If you have any questions or concerns, please feel free to call Shelly Carter, at (405)773-4299 or Bill Weeks at (405)744-5129

Thank You,



Shelly Carter

OKLAHOMA STATE UNIVERSITY



Division of Agricultural Sciences and Natural Resources
Department of Agricultural Education, Communications
and 4-H Youth Development
448 Agriculture Hall
Stillwater, Oklahoma 74078-6031
405-744-8036, FAX 405-744-5176

March 19, 1999

Dear Landowner,

Approximately one month ago I sent a questionnaire to you requesting that you fill it out and return it to me. If you did not respond at that time I am asking you again to **please take a few minutes of your time to fill out the enclosed survey and return it back to me in the enclosed postage paid envelope.**

I need your help to determine the knowledge and attitudes about prescribed fire of Osage County, Oklahoma landowners. Many people are concerned with educational efforts about prescribed fire and how these efforts can be improved. However, little is known about landowners current knowledge or attitudes on the subject. Therefore, you were randomly selected from the Osage County Landowner Records to take part in this anonymous survey. Results from the survey will help determine needs of educational programs and aid in setting environmental educational goals.

I need your help. Enclosed is a copy of the questionnaire that will be used in the study. Please take the time to complete the questionnaire and return it in the enclosed self-addressed stamped envelope. It would be very helpful to have your completed questionnaire returned to me by April 15, 1999.

Your responses are confidential. A number is on each of the questionnaires simply for computer entry. No names or individual information will be used or released to anyone. If you have any questions or concerns, please feel free to call Shelly Carter, at (404)773-4299 or Bill Weeks at (405)744-5129.

Sincerely,

A handwritten signature in cursive script that reads "Shelly Carter".

Shelly Carter



The Campaign for OSU

Survey Questions

- I. Attitudes about the use of prescribed fire. Circle the most accurate level of your agreement with the statement.

CA = Completely agree A = Agree N = Neutral D = Disagree CD = Completely disagree

- | | | | | | |
|-------------------------------------------------------------------------------------|----|---|---|---|----|
| 1. Oklahomans should use prescribed fire despite potential air pollution. | CA | A | N | D | CD |
| 2. More areas of Oklahoma should be prescribed burned to increase wildlife habitat. | CA | A | N | D | CD |
| 3. Fire is beneficial to Oklahoma native plants and trees. | CA | A | N | D | CD |
| 4. Prescribed fire causes a threat to human life. | CA | A | N | D | CD |
| 5. Prescribed fire destroys scenery. | CA | A | N | D | CD |
| 6. Prescribed fire causes most animals to lose their homes. | CA | A | N | D | CD |

- II. Knowledge about the uses of prescribed fire. Circle T for true and F for false.

- | | | |
|-------------------------------------------------------------------------------------------------------------------------|---|---|
| 1. Prescribed fires usually result in the death of the majority of animals in the area. | T | F |
| 2. Prescribed fires can be used to control disease and insects. | T | F |
| 3. Complete suppression of forest and rangeland fires would reduce habitat for animals such as whitetail deer. | T | F |
| 4. Fire benefits Oklahoma's native forests, shrublands, and prairies. | T | F |
| 5. Some plants in Oklahoma require fire in order to complete their life cycles. | T | F |
| 6. The use of prescribed fire does not reduce potential for wildfires. | T | F |
| 7. Prescribed fire destroys habitat for Oklahoma endangered and threatened species such as the red-cockaded woodpecker. | T | F |

- III. Demographics. Mark only one for each number.

1. Male _____ Female _____
2. Age: _____
3. Education- Circle highest grade completed.
 6 7 8 9 10 11 12 (high school diploma)
 13 14 15 16 (BA/BS)
 17 18 19 20 (MS/PHD)
4. Race: _____
5. Any additional comments:

APPENDIX C

COMMENTS

Male, 39

Personally I don't like fire's at all. I believe we have both good and bad things that happen when we have fire. I know that after a fire it helps the grass to grow back pretty and green. It seems like my place is in the heart of the prairie fire country every fall and early spring. We have to deal with grass fires. It is a problem and a constant threat to my home and family. I would like to learn more about grass and timber fires; the good and the bad.

Feel free to use my land to do your research. I believe this would be a good place to gather information. Who knows what new things we all may learn. (signed & phone)

Female, 60

I have been a landowner for just a short while, so don't really know that much about this subject, nor have I ever considered it until now.

Male, 57

I don't know much about this subject. I do think burning every year like most people in Osage do is too often. I think it is better every 2 years. It gives grass more growth and kills brush better. I try to burn every other year.

Male, 68

Some fires I know does good. But take large territory, rabbits and quail have nothing to eat. But rabbits and deer can eat bark from tree. Also I think burning does help get rid of ticks. Glad to help. Hang in there and do a good job. (signed)

Female, 58

Controlled fires help weed control.

Male, 42

Ranchers need to know when a fire is completely out. Most don't know shit about fires.

Male, 60

Fires reduce the potential for wild fire but they do not prevent it. It would have been helpful if you had included a definition or your definition of "prescribed fire". I assumed "prescribed fire" meant a fire set on purpose.

Male, 53

Prescribed fire improves range land, kills ticks and sets small brush back. Also there is less fuel in case of wild fire.

Male, 46

As a land owner I use prescribed fire two times a year; spring and fall to reduce potential loss from wild fire.

Male, 40
Burn baby burn.

Male, 60
Prescribed fires I think are real tough on wild turkeys, quail, rabbits and small game! Also some prescribed fires are not watched closely and do damage to neighbors and others land and property. Sometimes oil field operators equipment is damaged.

Male, 57
Fire is very good for brush control.

Male, 41
I am a rancher and a volunteer firefighter. Prescribed burning is necessary for good land management. It would be a lot simpler and easier on everyone concerned if the people doing the burning would notify and cooperate with area fire departments. Thanks for asking. (signed & address).

Male, 55
During my fling at higher education in Stillwater, Fire was a no-no. I disagreed, based on personal observation here I Osage. When I began managing a medium sized ranch in 1980, I use fire as a vital tool to clear downed sprayed timber, cedar control, and native grass enhancement. Now, as I operate my own ranch consisting of deeded land, private land, and a considerable amount of BMI Dept. leases, fire is an essential part of range management. I am pleased that OSU has seen the "Smoke".

Male, 64
Some questions (2,4,6) are not good questions. Should be reevaluated.

Female, 42
I think prescribed burning is fine, provided the fire is kept under control and supervised by knowledgeable people. Every spring our property is threatened by fires that nearby ranchers light but fail to control properly. Regular burning needs to be done early enough in the spring so birds who nest on the ground are not disturbed.

Female, 89
Good luck. (signed)

Male, 71
Question 3, section 1, this would be up to the individual; to me cedar and brush growing in native grass pasture looks awful.

Male, 46
I am pleased to see such a survey. As you can see I believe in prescribed burning. Thanks.

Male, 74

I need to burn my pastures to get rid of wire grass and small indigestible evergreens and honey locus trees, but can not burn because of the small developed tracts that join the pastures. Burning would be the best and most economical way to clean my pasture and give the bluestem and bermuda a better chance.

Male, 49

Rancher 15 years.

Female, 40

Intelligently used prescribed fire gets rid of detrimental weeds and improves grasslands. Thus, the rancher can produce more beef and feed more people.

Male, 44

Prescribed fire is in the most part more beneficial than harmful. However, it should be used in conjunction with herbicide and should not be done every year.

Male, 73

We have used controlled fire for years- primarily on hay meadows- every other year and bluestem and woods pastures. These fires are particularly helpful in tick control and most buildup in woods. Wildlife temporarily leave the area but return again soon. We notice white tail deer in the burned area almost as soon as the area cools down.

Male, 44

What does race have to do with my knowledge/attitude on controlled fires?

Male, 60

Liability is the major detriment to prescribed burns on my ranch.

Female, 39

Moved to the State in August from NM where many prescribed fires burned out of control. I am more aware of practices there than in OK. Good luck to you.

Male, 77

Burning is bad if a dry year, its lets the soil dry out.

Male, 34

Animal rights people, need to stay out of ranchers business, we have a hard enough time making a living as it is. We don't need to be worried about the red-cockaded woodpecker, their will be enough trees and telephone poles for them. A fresh burned pasture just looks bad for a week or 10 days then it is beautiful, productive, and clean. It controls for cedar, buck brush, sumac. If you want something productive find a better

way of controlling the under story or making them productive somehow. Thanks you for your time.

Male, 58

A very useful tool for ranchers.

Male, 50

Good luck.

Male and Female, 94

This property in Osage has been owned by the family for around 100 years, Grandfather, father, and sons. This survey is hard to fill-out in full as range fires set by unknown people has completely wiped out all buildings, horse barns, ect. On our property. Some items mentioned may be fine, others not. (signed)

Male, 72

Jesus saves. Assorted pamphlets.

Male and female, 76

We have never used the burning.

Male, 59

Good luck on your studies.

Male, 45

I am not completely knowledgeable about all aspects of prescribed fire. But I believe my answers are true. I also have several small pastures that I would donate for a burn if you are interested.(signed)

Male, 36

I own land in Osage but live elsewhere. I am a member of the volunteer fire department here. Dewey Co. is very aggressive in prescribed fire to control eastern red cedar. I have been on many prescribed burns the past 10 years and know first hand the many benefits of it. If you need a test plot of land to do a burn, consider mine in Osage. I would be more than happy to assist. If I can be of any more assistance please let me know.(signed & address & phone).

Male, 78

I've ranched in Osage Co. for more than 58 years. Good luck on your research.

Male, 35

Prescribed fire should be 3-5 years each. Educational efforts about prescribed fire should be sent to each land owner. Good luck in your research.(signed)

Male, 69

The only way to control brush is Prescribed Burn.(signed)

Female, 48

Unfortunately some area ranchers seem to think they have to burn off every year. With no real regard to other land owners. A burn every 5 or 10 years clears the debris and allows new growth. New growth is needed to supply wildlife needs. However, they also need the cover supplied by fallen trees, etc. Even nature supplied burn off by way of lightning from the beginning of time. A well controlled burn can be beneficial to men and animals alike. Of course this should be agreed to by neighbors and ranchers with all parties involved and should be contained to certain acres, not hundreds of acres. Greed seems to rule some people. Harmony with nature and neighbors should be of utmost importance.

Male, 62

We're not sure that smoke from grass and trees really hurts anything. Fire does cause some death and destruction for animals but is more beneficial in the long term for the greater number. It does help control wildfire.

Male, 43

I do not use prescribed fire but I think in some cases its necessary, not in all cases though. Pollution should always weigh in as a factor.

Female, 51

Some questions I do not know about. The only reason I don't like set fires is that most ranchers set these and go on about their business and it ruins lots of things for oil producers and other small farmers and ranchers.

Male, 47

One day on OETA I heard a program which described a study to determine if the meadow lark was becoming endangered in Osage Co. They set up feeding boxes and no meadow larks came. A few days later we drove from Ponca City to Caney, KS via HWY 60. I counted 22 roadside meadow lark calls and quit counting, well before Shidler. The windows were up and we could hear that many close to the road! My conclusion is that the meadow lark is NOT endangered! Prescribed fires must be accomplished in the third and fourth week of February to be effective and not endanger nesting ground birds. Often it is done much too late. I should be qualified to comment because I have been burned out twice, once my tool shed worth ~ \$10,000; and next my trailer house worth ~ \$5000. The culprits are cigarettes, unattended burn barrels, and loose oil field electrical lines. If the red-cockaded woodpecker is endangered, why do I see so many! The woodpecker lives in the trees not on the ground.

Male, 49

I think controlled burns are beneficial to hay and pasture lands. I also think that controlled burns should be done on public hunting areas. Not only to control the risk of wildfires, but also to clean up some badly overgrown areas.(initialed)

Male, 31

Fire is a resource that ranchers use to put additional weight on cattle(or any other grazing animal). The difference could be as much as 65 lb. But often more like 50. Fire is one of the cheapest tools ranchers have. To abolish burning would be detrimental to ranchers. Benefits of burning are: weight gain, grazing control, unwanted woody plants, weed control and many more.

Male, 58

We have small acreage. The only agriculture is a garden.

Male, 32

In 1996 a fire burned 1500 acres of bottom land near Ralston where I hunt. In '97 the deer population decreased due to lack of forage not cover. In '98 the deer population grew to more than normal, due to the recovery of undergrowth and new fresh shoots and buds. Birds and small mammals didn't seem to be affected. Thousands of armadillos still abound.

Male, ?

I think prescribed burning can be beneficial; although I do not think range land needs to be burned every year and the spraying of herbicides does a lot to harm birds and wildlife.

Female, 41

Education = AS Applied Science and Nursing

Male, 60

Good luck on your research.

Male, 48

It would have been useful to have the option of Don't Know to more accurately reflect participants knowledge of the fire issue. With only the option of T/F you force the participant to guess instead of reflect knowledge.

Male, 93

Rancher

Male, 62

I was one of the first to spray brush and burn/doze brush. I am very sorry to have done any and all of this. As the land is not as good for future generations as it was 40 years ago. Most was done with the governments approval and they helped pay for it. I still have the land to prove it. Please don't listen to what the so called smart people say- Only time tells the truth! I've been there and my dad at 84 has the same problem's.(signed)

Male, 54

Fires need controlled and every year.

Male, 71

Fire should not be used in dry years. It causes weeds to increase, and reduces carrying capacity.

Female, 51

Good luck! Hope you get lots of responses.

Male, 71

I do not agree with any prescribed fire.

Male & Female, 77& 72

Prescribed burning has a two fold effect. It will kill a lot of native trees with a thinning out of many of the smaller ones, it destroys cedar completely and at the same time prevents the growth of grasses native to the area. We had a set fire on our place in '92 and if anyone had a desire to see the effects compared to adjacent areas that escaped, I would be glad to show it. I did not set the fire but it covered about 60 acres of trees and brush. I have many standing dead trees because of it. One bad result was a great increase in blackberry. (signed & address)

Male, 62

An introductory explanation or definition of "prescribed fire" would have been helpful.

Male, 49

I would like to see your results to this survey if you have the opportunity to send them. Thanks and good luck. (signed & address)

Male, 58

Are you Mac's daughter?

Unknown

I do not know what prescribed fire means so I can not answer.

Female, 81

I have been a rancher for 62 years. Controlled burning is a habit with us. We divide and burn different pastures each year; therefore controlling all out burning at one time. Cleans pastures of worms and parasites such as ticks, and cleans pastures of dead under grass. Burning can cause some animals to lose their homes but it depends where the burning is.

Male, 62

Good luck.

Female, 82

Planned and controlled burning can be beneficial and definitely protection. No burning at all can leave a lot of problems.

Unknown

Your questions are slanted. Do a research experiment over 10 to 20 years, not a paper with T-F questions.

Male, 57

My answers are based on what I consider to be a "controlled fire". By this I mean a fire that does not destroy or damage anything unintentionally, trees, shrubs, buildings, ect. It also must be done at the proper time so that it does not threaten ground nesting birds or young wildlife such as deer fawns, young rabbits and also emerging plants. Controlled burning can greatly benefit open range land and lightly forested areas but it can be a threat to heavily forested areas or if it is done close to residential areas. Good luck.

Male, 66

I can list many pros and cons, but I feel both wild and controlled fires are more beneficial than destructive. I strongly feel that ranchers or farmers should not be allowed to just burn as they now do without fire guards around the area to be burned. They also need equipment available, sprayers, dozer's, people, ect. To help control it depending on the size of the controlled burn. They should be required to notify local fire companies of the location and should have liability insurance. The home we lost due to a neighbors burning his pasture and none of us were informed so we were not home. It was not insured. The neighbor denied all responsibility even though witnesses saw his ranch hand lighting the fire. He claimed it was backfire. (signed & phone #)

Female, 46

We use controlled burning on our land. Its near a major highway and every spring, people set fires along the highway on purpose, especially during high fire danger days. There is quite a bit of brush in the area, so it can get pretty scary when there is a fire coming your way with the wind blowing out of every direction causing small fire tornadoes at your feet. No one in our family would dare to leave their homes during this time for fear of losing everything. Finally we decided to burn the land around the homes in every direction at our convince, with the proper equipment, at the proper time and with the help of family and

friends. After we burn we put the fire out that is left burning and we never burn during windy days or when a wind storm is coming. The fire also helped the under brush and tall grass to be cleaned out and it helps control ticks. Fire is very scary and dangerous. In our area we have seen many people lose everything. It is far better to take a little time than lose everything you have to fire that has been intentionally started by someone who has no respect for other peoples homes and property. Thanks for the opportunity to help you with your survey. (signed)

Male, 56

We have used prescribed burning the past three years and I feel we have increased the wildlife population by at least 50%, also we have very few ticks. (signed)

Male, 58

The questions are poorly formatted as well as the options for answers.

Female, 70

As my answers probably indicate, I am not really very knowledgeable. Assuming prescribed fires are deliberately done to improve grazing for livestock, I believe certainly humans and animals should be kept out of the line of fire. Do fire departments plan burn-off or land owners themselves held responsible. (signed & address & phone)

Male, 46

You should know most Osage Ranchers do not use prescribed fires to control brush, ticks, etc. In fact most are hurting habitat and risk human life. They burn every year and with drought are only hurting the land.

Male, 69

I am adamantly against the so called "prescribed fires" (which you do not define.). I have been in situations where my family has been endangered by these fires. We have had flames 10 ft. high burning within 50 yards of our home. These fires should be considered a felony by our State Legislature. Why are you doing these questions? I will help in any way I can to get these fires eliminated! (signed)

Female, 58

Residents of our county have burning fever. In eight years we have almost been burned out three times. Our fruit trees, junipers, cedars, white pine and several other evergreens were destroyed. Of our acres, we have left 10 to wildlife. Yet we have seen a decline in horned toads, lizards, bats, lady beetles and other insects. Wild grass seed are destroyed when burned, leaving less for wild birds, acorns for deer, raccoons and other animals. I have also seen severe erosion in areas that are burned almost every year. My husband and I belong to the Arbor Day Foundation, Audubon Foundation and Nature Conservancy.

Even though we are just two people, we hope we can leave our earth a little better place for future generations. (signed & address)

Female, 31

Thank you for bringing this to my attention. I now know what to research the next time I am at the library. I would be interested in future information. About the survey, I found it rather confusing. I am not much of a visual learner and the vocabulary was awkward in some way, I can't explain it. Now I see why the other family member paid no mind to it. I am glad to help out. (signed & address)

Male, 33

Good luck at OSU!!

Male, 55

(signed & address)

Female, 45

I believe in pasture burning but not every year!

Female, 41

We live in an area surrounded by the larger ranch lands, so what we want or say about something the ranchers do doesn't matter. All I know is we can't have our own little backyard garden because of the aerial sprayers, and we have constant headaches and coughing and shortness of breath all spring because of all the burning. It gags. Im sure its important to the ranchers, but they all burn and burn and burn, with no cares about the humans who need to breathe.

Male, 61

If my understanding of the benefits of prescribed burning is incorrect, please let me know. (signed & address)

Male, 57

I think burning every year is too much. But Most people in Osage County will do it anyway. I try to do it every 2 years.

Male, 60 and Female, 55

This survey has reached a couple who are both small land owners in Osage County and Oil and Gas producers in the same area. As oil producers, we can't help thinking this survey was designed to obtain a preconceived result; as land owners, we are aware of some of the benefits (and dangers) of controlled burning. We are not ranchers, but we have observed first hand the regeneration of pastures after a burn, resulting in richer diets for cattle and better growing conditions. We have also spent thousands of dollars over the years replacing and repairing damaged and destroyed oilfield equipment as a result of "controlled" burns. In areas where farming/ranching and industrial/oil field businesses co-

exist, we think good communication is the key to success. For example, Tim Drummond, manager of several ranches in Osage County, has adopted a policy of notifying oil producers by letter about one week in advance when a burn is planned on or near their properties. This gives producers time to make sure all lines are buried, weeds cut and cleared, and personnel on hand when the burn occurs to avert possible accidents. Since the Nature Conservancy's Prairie Preserve is located near us, we have had an opportunity to learn the benefits of burning to the environment, and we bow to the superior knowledge and experience of dedicated conservationists. But we also appreciate it when we are included in burning decisions which can result in erosion around production sites and destruction of expensive pipelines and equipment.

Male, 88

Cigarette smoking causes more unwanted fires than any other.

Female, 85

Would not like fires in our area especially due to nearness of schools and residents. I've lived here 75 years of my life- have seen big fires in our area-without adequate assistance to control them.

Male, 63

Good luck

Male, 49

I'm not familiar with the "Prescribed Burn Program", but I assume it refers to control burns to prevent wild fire spread, improve grass forage, and control weeds. I have answered these questions based on these assumption being correct. I believe control burns can improve grazing and prevent wild fires, but am skeptical of the control factor in timber, and weed control success.

VITA

KAREN MICHELLE CARTER

Candidate for the Degree of

Master of Science

Thesis: ATTITUDES AND KNOWLEDGE ABOUT PRESCRIBED FIRE OF OSAGE
COUNTY, OKLAHOMA LANDOWNERS

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Kansas City, Missouri on December 16, 1965, the daughter
of Ron and Sharon Carter.

Education: Graduated from Ruskin High School, Kansas City, Missouri in May
1984; received Bachelor of Science degree in Animal Science from North
Carolina State University, Raleigh, North Carolina in August 1996.
Completed the requirements for the Master of Science degree with a major in
Agricultural Education at Oklahoma State University in July, 1999.