AN ANALYSIS OF PRESERVATION AND USE VALUES OF OKLAHOMA'S PARK AND RECREATION AREAS

By

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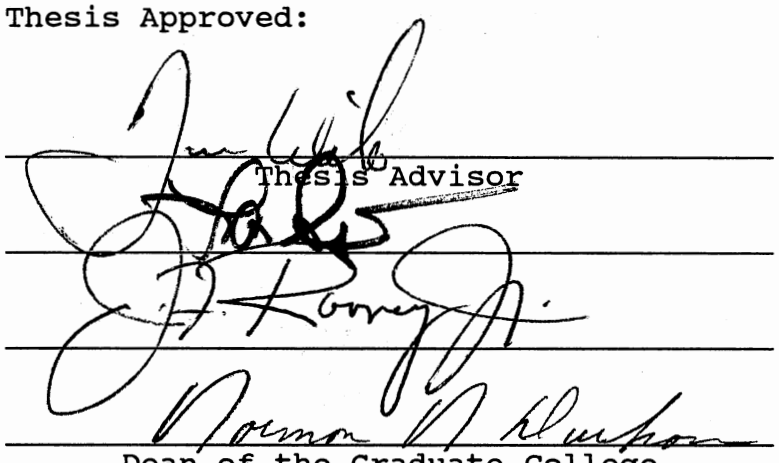

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CHAPTER I

INTRODUCTION

Appreciation of unique natural environments first swept the United States in the latter half of the nineteenth century. At approximately the same period of time, several scholarly works were published concerning man and his environment. George Perkins Marsh's theory of man as an agent of change (1864), as well as Charles Darwin's theories of evolution (1859) sparked debates that in turn gave way to further theories on man and his environment. Environmental degradation was suddenly an issue to many Americans. The idea of preservation was a concept that arose from issues created by man's interference with nature's balance.

Arguments for preserving scenic environments were supported by such famous Americans as Henry David Thoreau, John Muir, and Theodore Roosevelt. These men gave birth to the concept that "wilderness" was not a place of wild and unruly creatures, nor was it necessarily intended to be conquered by mankind to support his growing dependence on natural resources (Nash 1967). Nash (1967) stated that the preservation of undisturbed lands of America was needed by civilized men and women to balance and buffer the quicker

pace of urban lifestyles.

To the American pioneers, many of whom held a protestant work ethic, preservation loomed as an absurd idea. This held true as the country's population expanded west and eventually found itself in the Oklahoma territory. Nash (1967) holds that a tremendous change in norms, values, and opinions regarding the idea of preserving an area of natural beauty has occurred in the past one hundred and fifty years. Today it is thought that recreation is a required and necessary part of American lifestyle. Concerning recreation norms, Fesenmaier and Schroeder (1983) found that 95% of today's Oklahomans participate in some form of outdoor recreation.

Benefits from the preservation of park and recreation areas are derived from both tangible use and intangible appreciation. Those who participate in actual outdoor recreation are tangible users. These are people who benefit in the actual participation of outdoor recreation. Intangible appreciation benefits are developed by offsite users. These are people that benefit in the preservation of an area without actually visiting it.

Problem

The preservation of natural areas in Oklahoma is important to many people who reside in the state because of the benefits they receive from the environment. It is of

value to those people who actually recreate at state facilities, also known as onsite users, as well as to those people who receive some form of satisfaction in the knowledge of the existence and preservation of such a site, referred to as offsite users. Many people feel these areas have intrinsic values to the general public that are not taken into account by resource managers when evaluating the benefits of public recreation. Thus, both onsite and offsite users may benefit from the preservation of natural environments.

The problem is to determine a way to select an appropriate recreational user fee that reflects use value. Subsidized fees derived from tax monies should reflect preservation (nonuse) values of Oklahoma residents, and should be added to user fees to produce the income necessary to support state parks and recreation areas. Preservation (nonuse) values and onsite (use) values that the citizens of Oklahoma place on individual state supported parks and recreation areas need to be better understood so that the state may adjust sources of funding according to the way in which benefits are received by the public.

Currently, the state of Oklahoma does not consider use and nonuse values of facilities when allocating funds to state supported parks and recreation areas. In fact, according to park managers and state policy makers, the state makes decisions on individual budgets for such

environments by investigating needs based on both user fees (visitor days) and expansion/maintenance of facilities. One goal of this research is to demonstrate the merit of including preservation values when evaluating and determining the sources of support for state parks and recreational areas.

If offsite uses exists then they should be observed when individual budgets are being determined. The value of preserving a given environment may be determined by asking whether the public is willing to support an area, and if so, at what cost to the user as well as the nonuser. This will define the percent of the budget to be paid by both the users and nonusers of state parks and recreation areas. This will also determine which areas are supported by the users of an area, thus defining an activity dependent area, and which areas are supported by nonusers, that will be referred to as resource dependent areas.

Hypotheses

The hypotheses for the study are as follows:

1. Preservation values (nonuse) have greater value to the general public than recreation values (use) in terms of why one should preserve a given area.
2. A significant, measurable difference will exist between how Oklahomans are willing to support the preservation of activity dependent areas as opposed to resource dependent areas.

Objectives

The primary objective of this research is to measure the preservation values associated with activity dependent and resource dependent recreation in Oklahoma. Past research has largely ignored the use of option, existence, bequest, and use values at state supported parks and recreational facilities. Crompton (1981) has suggested that all who benefit from the existence of parks and recreation areas should share the cost of supporting the area. The objective of this research was to provide a guidelines for the state of Oklahoma for determining the percent of funds needed from tax dollars, as well as the percent of funds that should come from those people who utilize state parks and recreation areas. The guidelines may then be applied to each individual park or recreation area in Oklahoma to resolve the question of where funds shall originate to assist in budget decision making.

The budgets of Oklahoma's individual parks and recreation areas can be determined by measuring the equity received by the public when a given environment is preserved and combining it with the fee charged for use. It is believed that activity dependent areas will prove to have a higher use value to the public, while resource dependent areas will demonstrate greater preservation (nonuse) values. This information may be useful in determining the sources of

funding for parks and recreation areas.

It is also an objective to determine the degree to which Oklahomans desire to protect natural areas. It is becoming common in today's society for citizens to display tremendous amounts of support for environments that offer opportunities for recreation and relaxation. This may be shown by the general public's willingness to support the maintenance and preservation of Oklahoma's parks and recreation areas.

CHAPTER II

REVIEW OF LITERATURE

Preservation value

Preservation values have only recently been used in assessing recreation benefits. Preservation values represent the idea that people receive intrinsic satisfactions from recreation areas without actually visiting them. These benefits are derived from option, existence, and bequest values that the public places on a given area (Walsh, 1986).

Walsh (1986) has defined each of the three preservation variables in the context of outdoor recreation. Option value has been defined as the preservation of an area for possible future use even if one had never visited the site in the past. This value is bestowed by knowing a recreation area will be available for future use. Existence value refers to benefits received by knowing that an area exists for plant and animal habitat regardless of whether a future visit is planned. Bequest is the idea of preserving an area for future generations. This value is appealing to those who wish to leave behind an area to one's descendants or to others for enjoyment. The three concepts are together

referred to as preservation value. The idea of preserving a given area in its present state often represents an intrinsic value that is not included as a benefit when determining budgets of parks and recreation areas and may therefore, grossly underestimate park benefits (Ulrich and Addoms, 1981). As stated by Walsh (1986), preservation values are only a portion of the total benefit offered by an area. Use value is also an important variable and refers to the onsite consumption of recreational activities.

The awareness of preservation values date to Weisbrod (1964) and Krutilla (1967). These scholars suggested that intrinsic values, in addition to use values, should be investigated to determine the whole value of parks and recreational areas. Therefore, both preservation values and use values must be addressed to determine the benefits received through supporting such environments. Walsh (1986) has suggested that option, existence, and bequest demands, as well as public use, should be included when assessing the economic benefits of public owned lands.

Two recreation variables are relative to preservation values. These types of recreation are known as activity dependent and resource dependent recreation. Scitovsky (1976) defines activity dependent recreation as involving physically strenuous exercise that heightens psychological stimulation, excitement, and benefits. Examples of activity recreation include jogging, bicycling, playing outdoor

games, tennis, golf, driving off-road vehicles, snow skiing, swimming, water skiing, boat racing, fishing, and snow mobiling (Walsh 1986). Walsh (1986) defines resource dependent recreation as involving the viewing of natural beauty of the environment. Resource dependent activities include hiking, backpacking, horseback riding in natural areas, mountain climbing, bird watching, nature studies, and photography.

The difference between resource dependent and activity dependent areas is, therefore, associated with the reason one chooses to pursue an activity and where it is done. Psychological satisfaction from nonconsumptive activities is related to individual knowledge and sensitivity to wildlife, geology, plants, color, and natural form. Development by man of resource dependent areas is very limited. There very few, if any, roads, commercial businesses, or easy public access to the entire facility.

Most parks and recreational areas were established for the preservation of an area's unique historic, scenic, natural, or wildlife resources, and to make them available for the enjoyment of the general public (Walsh, 1986). This dual role leads to complications in measuring total value because such facilities produce both onsite and offsite benefits to the public. Preservation values are indirect uses consisting of the offsite consumption of knowledge about the quality of the resource area by the public. In

contrast, use values refer to the onsite consumption of recreation activities by users (Walsh 1986). Indirect use is much more difficult to characterize and measure than direct use (Kevin and Bishop, 1984). Different use requirements should be understood when defining total consumption of park and recreation areas.

Many people feel that the public is willing to pay for the benefit of preserving parks and recreation areas, even if they do not use a particular site (Krutilla 1967, Walsh 1986, Weisbrod 1967). If preservation values are included in the process of measuring the benefits of parks and recreation areas then all those who support a facility, both as users and offsite users, should be represented in the final budget planning. Crompton (1981) states that park managers are possibly overlooking the largest portion of the population that supports parks and recreational facilities. Though little research has been developed in this area, the call for further research has remained strong by these scholars.

Other researchers have considered the idea of preservation values and their importance to society. Peterson (1981) states that the true value of outdoor recreation must be established so that future planning of natural habitats will benefit the general public. Crompton (1981) suggests that a model should be developed to include costs to both users and nonusers.

Walsh (1985) researched Colorado's rivers using preservation values to determine which should be preserved and designated as scenic rivers. The research concluded that preservation values are a part of the total value of the rivers studied and should be used to determine the entire economic value to society.

Randall, Hoen, and Swanson (1990) carried out research using option, existence, and use values to propose a model that estimates the benefits of the Tongass National Forest. Their findings determined that both option and existence values are an important part of the entire value of the Tongass National Forest. Bequest value was not included as part of their study.

Walsh (1985) was the first to suggest that preservation values could be determined by the public's willingness to pay to keep a natural environment from a degrading irreversible act by man. Walsh's (1985, 1986) studies on the subject of preservation and preservation's intrinsic values to man have been the only empirical research presented on the subject of option, existence, and bequest combined with the demands of users of publicly supported environments. The cost of this maintenance would be drawn from the general public tax system as well as from user fees. The total costs of operating a given park should equal the total benefits received by the public (Walsh, 1986).

Walsh (1985) found that the public is willing to pay for the protection of natural areas. This suggests that the public may attribute values to these areas that are not necessarily tied to their own use.

Oklahoma's Tourism and Recreation

Oklahoma has nearly 60 state park and recreation areas (Oklahoma Tourism and Recreation Department, 1988). These areas have a variety of uses and purposes. The Oklahoma Tourism and Recreation Department does operate in a way that benefits both users and nonusers. Budgets are made without the input of nonusers, but nonusers are considered an important part of the general planning (Oklahoma Tourism and Recreation Department, 1982, 1974).

The greatest portion of money used to support the park and recreation system is derived from state funds (Oklahoma Tourism and Recreation Department, 1974). This state money is justified by the belief that most citizens want to preserve the natural areas even if they do not participate in recreation at the facilities (Oklahoma Tourism and Recreation Department, 1974).

There is presently no process for determining the amount of money to be collected from users and nonusers of facilities in Oklahoma. Oklahoma's policy for expansion of its state park and recreation areas are determined by use demands (visitation days) that may lead to park stress from

overcrowding and do not include any intrinsic preservation values in their judgment (Oklahoma Tourism and Recreation Department, 1974).

CHAPTER III

REVIEW OF STUDY AREAS, SURVEY, AND RESULTS

Study Areas

A small sample of parks and recreation areas managed and supported by the state of Oklahoma was chosen to measure preservation values among citizens of Oklahoma. Oklahoma was chosen as a research area for several reasons. Oklahoma has a diversity of park and recreational areas including both activity dependent and resource dependent areas. Furthermore, it was believed that the impact of research would be of greater value on the state level than national level.

The selected sites were chosen by polling 127 Oklahoma State University students during the spring of 1989 (Appendix A). The poll was taken to identify parks and recreational areas in Oklahoma that are considered important in terms of preservation. The students were chosen to represent the population of the Oklahoma and therefore, the poll my be biased towards people in the age bracket of 18 to 22 years.

The students were asked to list the natural areas within the state of Oklahoma that had an emotional value to

them. This value was orally defined as a stirring emotion that would be disturbed if irreversible environmental degradation occurred. The participants were instructed to list as many sites as they felt should be included.

From the poll a list of the seven most frequently named state supported sites was compiled. Because the questionnaire was open-ended, there were several choices that were not included in the final tally of sites. Examples of these places included privately held land, city parks, national forests, scenic drives, and places whose existence could not be verified.

The areas chosen to be evaluated were Alabaster Caverns, Grand Lake, Great Salt Plains, Keystone Lake, Little Sahara Dunes, Red Rock Canyon, and Tenkiller Lake (Figure 1). These locations may prove to be biased towards the state's northeast population base. Several areas, especially lakes, located in the Oklahoma City area may have been included as a part of this study if the poll was given to people in central Oklahoma.

These seven sites were ranked extremely close together in terms of the number of votes received from students the polled. The site that received the greatest support by the students was Alabaster Caverns which was mentioned in the poll responses by 19% of the participants (Table 1). Following closely behind was Grand Lake (18%), Little Sahara Sand Dunes (17%), Great Salt Plains (16%), Keystone Lake

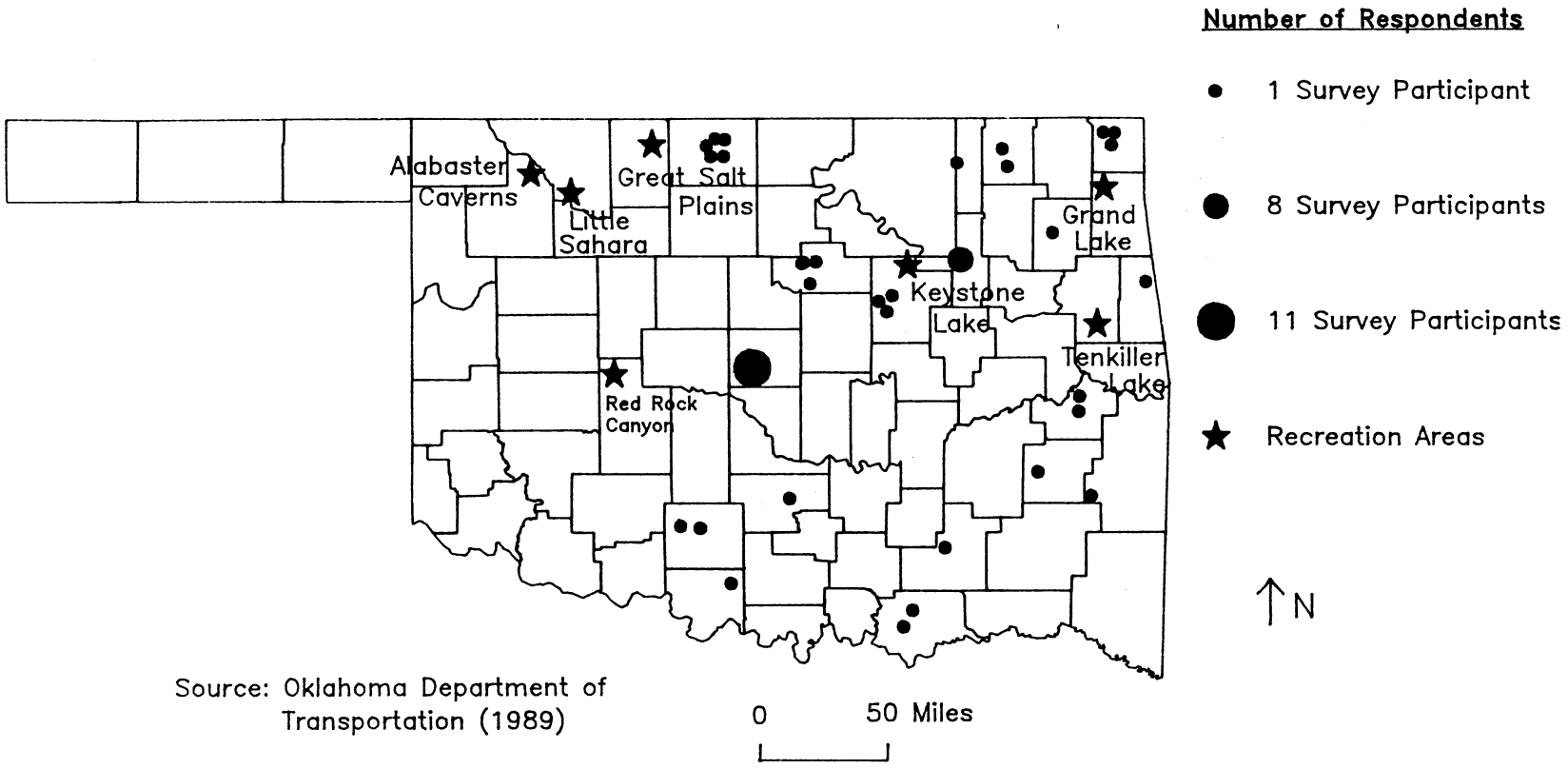

Figure 1. Map of Park and Recreational Areas included in Research and Respondent Location

TABLE 1

RESPONSES FROM STUDENT POLL

Site	Number of Responses	Percent Listed
Alabaster Caverns	24	19
Grand Lake	23	18
Little Sahara Sand Dunes	21	17
Great Salt Plains	20	16
Keystone Lake	20	16
Tenkiller Lake	20	16
Red Rock Canyon	16	13

(16%), Tenkiller Lake (16%), and Red Rock Canyon (13%).

A site investigation was conducted at the seven areas to grasp an understanding of how they operate (financially) and to determine what type of activity (resource or recreation dependent) occurs at each.

Resource managers contacted at the sites, as well as park and recreation personnel in Oklahoma City, indicated that financial support for the entire operation of each park or recreation facility came from a combination of user fees and taxes. The process of how this money was divided between user and nonuser fees was different for every site investigated. In fact, none of the managers contacted were able to provide information concerning the percentage of funds created from user and offsite user fees for a site.

As mentioned earlier, the seven sites were also visited to determine which appeared to be resource dependent and which were recreation dependent. Of the seven sites investigated, Alabaster Caverns and the Great Salt Plains were the only two that were determined to be resource dependent facilities. Recreation dependent areas were observed to include Grand Lake, Keystone Lake, Little Sahara Dunes, Red Rock Canyon, and Tenkiller Lake.

Alabaster Caverns is located in the northwest part of Oklahoma. It is 200 acres in size, offers guided tours of a alabaster cavern, and has camping facilities (Oklahoma Tourism and Recreation Department, 1982). There are also

hiking trails on the grounds for those who choose to explore on the surface of the earth.

Grand Lake's proximity to Tulsa offers urban dwellers a quick weekend get-a-way. The lake has 59,200 surface acres of water (Oklahoma Tourism and Recreation Department, 1982). Boating, fishing, and camping are favorite activities at this facility.

Oklahoma's Great Salt Plains is in the northern portion of the state and offers unique surface formations. The park is 840 acres in size and has camping and hiking facilities as well as an adjacent lake (Oklahoma Tourism and Recreation Department, 1982).

Keystone Lake is also close to the city of Tulsa and offers a wide variety of water sports as well as picnicking and camping facilities. The lake itself has 26,300 surface acres of water and 715 acres of surrounding property (Oklahoma Tourism and Recreation Department, 1982).

Little Sahara State Park is in the northwestern portion of the state. This recreation area has an off-road vehicle facility within its boundaries. Though small (345 acres), this recreation area has sand dunes blown over from the nearby Cimarron River (Oklahoma Tourism and Recreation Department, 1982). One also may choose to picnic or camp at this facility.

Red Rock Canyon is a small park located in the southwest part of Oklahoma. This facility offers camping

and picnicking to the public. It has 310 acres of land and a 1.5 acre lake (Oklahoma Tourism and Recreation Department, 1982).

Tenkiller Lake is in the eastern part of the state and offers a variety of water activities as well as camping facilities. The lake has 12,500 surface acres of water and 1,188 acres of surrounding land (Oklahoma Tourism and Recreation Department, 1982).

Survey

A survey in the form of a telephone questionnaire was given to the 50 participants (Appendix B). The survey was designed so that questions concerning preservation values held by Oklahomans were easily understood. Data was gathered concerning each of the seven state parks and recreation areas included in the study so that a better interpretation of the sites could be carried out in terms of visitation and preservation. Socioeconomic values were addressed to determine the degree to which they affected a respondent's feeling toward either preservation or use values.

The survey was pretested on ten individuals who resided in the Stillwater, Oklahoma vicinity before any research participants were contacted for the full survey. With the suggestions and concerns of these people, the survey was fine-tuned so that all questions included were easily

interpreted by those who were a part of the larger study group.

Research Methodology

A telephone survey approach was chosen for the larger sample. It was necessary to contact 63 people to reach the desired goal of 50 participants. Of the total number of people contacted, three refused to cooperate and ten were not reached due to reasons such as no answer, changed telephone numbers, or disconnected or out of service telephone numbers.

The percentage of selected survey participants was divided on an urban (Oklahoma City and Tulsa telephone books) and rural (the remaining state telephone books) basis. Oklahoma population data (Oklahoma Population Reports) estimates as of July 1, 1988, indicated that 35% of the state's population resides in the metropolitan areas of either Oklahoma City or Tulsa. Therefore 35%, or 18 of the 50 people surveyed, resided in the Oklahoma City or Tulsa vicinity while the remaining 65%, or 32 of the 50 subjects surveyed, were selected from a statewide stratified random survey outside the state's two largest metropolitan areas. Cities, names, and phone numbers were randomly selected to create a list of participants. Dillman's (1978) procedures for randomly selecting survey populations for a telephone survey was followed.

Random number tables were used to determine the selection of telephone books, page numbers, and the persons on each page to be contacted by telephone. A total of 32 telephone books were used in the selection of rural participants. An additional two telephone books (Oklahoma City and Tulsa) were employed for use in urban areas. Almost all of these telephone books included numerous cities or towns. Random numbers for the task of selecting a page number were determined by using the number of pages that existed in the telephone book that was previously chosen. The next step in the selection of survey participant was actually randomly choosing a person from the already randomly selected telephone book and page number. This was accomplished by first determining the number of people listed on each page that had previously been designated for use.

The process of contacting survey participants occurred during the month of December 1989. Each survey participant was contacted on weeknights or Saturday afternoons. The calling took place after 6:30 p.m. and before 8:45 p.m. during the week and between the hours of 1:00 and 5:00 P.M. Saturday afternoon. These times were chosen to maximize the response rate. All contacts were made between meal times and before bed times.

Survey Results

Survey results are separated into two categories for purposes of statistical explanation. After simple statistics were completed, further analyses were performed with the aid of correlation analysis and Chi-square testing.

Simple Statistical Results

To gather a better comprehension of the data collected through the telephone survey, the data were summarized using simple statistics. Statistics were generated as medians, means, and percentages. The data that resulted are useful in determining whether survey respondents represented the general population of Oklahomans. Information was also analyzed on the use of state parks and recreation areas.

The first question on the survey asked the participants how often they had visited each of the seven recreational areas in their lifetime as well as in the past year. It is interesting that most had never visited more than two of the parks.

Table 2 represents question two, which asks participants about their feelings concerning the concept of preservation of the seven parks in this research. The participants were asked to rate the importance of preserving each site giving a number from one to ten with one representing the least important and ten the most important.

The mean for preserving each site was somewhat high when considering the participants did not visit the areas very often. The mean ranged from 7.7 (Little Sahara) to 8.4 (Grand Lake and Tenkiller Lake). This suggests that the preservation of a site can be an important intrinsic factor to nonusers. It also may indicate that there is little discrimination between the seven facilities amongst the small survey population.

The third table displays the results from the third survey question. This question was concerned with how the costs for the existence of activity dependent areas, and resource dependent areas should be divided between users and nonusers of these facilities. It was discovered that activity dependent areas (fishing lakes and camping areas) fees were divided equally (50%) between the state (nonusers) and users of these environments. Thus, the survey population defines camping areas as possibly being either activity dependent areas or resource dependent areas. The survey participants felt that the majority of a resource dependent area's budget (70%) should come from the state (taxes) while the remaining (30%) should come from user fees. This displays the difference that the public possesses concerning the preservation of a resource dependent area as opposed to an activity dependent area.

Question four on the survey concerns Walsh's ideas about preservation values as well as use values. The

TABLE 2

PARK AND RECREATION PRESERVATION RANKINGS

Recreation Area	Preservation Means
Grand Lake	8.4
Tenkiller Lake	8.4
Red Rock Canyon	8.0
Alabaster Caverns	7.8
Great Salt Plains	7.8
Keystone Lake	7.8
Little Sahara	7.7

TABLE 3

DIVISION OF COSTS FOR PARKS AND RECREATION AREAS

Type of Area	Users	State
Fishing Lake	50%	50%
Natural Area	30%	70%
Camping Area	50%	50%

results are shown on Table 4. The participants were asked to express their opinions of option, existence, bequest, and use issues on a scale from one to ten with one representing least important and ten representing the greatest importance in terms of preservation. The mean responses from the question indicate that preservation is important to the citizens of the state. In fact, it was observed that preservation (nonuse) values were of greater importance than use (activity) values. Preserving an area for the purposes of possible future use (option) had the lowest mean (7.9) of the three preservation values. The mean responses for existence and bequest were both higher than the option value and were extremely close to one another at 9.2 and 9.3 respectively. The use (recreation) value had a much lower (7.0) mean then the three preservation values. Such results further strengthen the notion that the citizens of the state of Oklahoma believe that the preservation of natural areas, such as parks and recreational areas, is an extremely important nonuse right of the population.

Several socioeconomic questions were asked on the survey. It was found that a greater number of females (66%) participated in the survey than did males (34%). One possible explanation for this is that more females answer the telephone than males.

Question six asked whether a respondent was a member of an environmental or sportsmen's organization. Few

TABLE 4

USE AND NONUSE VALUES

Reason	Mean
Bequest (preservation)	9.3
Existence (preservation)	9.2
Option (preservation)	7.9
Use (recreation)	7.0

participants (12%) were members of such groups.

The median age of respondents was 42. This age is higher than the state median age because respondents were all adults. Any children who answered the telephone were asked if their parents were available to speak. If a response of no was given then the parent was reached later, if possible. This kept the median age of the participants at a relatively high number.

The high median age of the respondents is also tied to the greater number of years of residence in Oklahoma. The participants had a median time of residence in the state of Oklahoma of 33.5 years.

The size of the city where each respondent resided was asked (Table 5). Most of the respondents lived in either a large city (population between 100,000 and 1,000,000) or a rural, farm, or town (population less then 5,000). Each of these categories had 38% of the respondents polled (for a total of 76% of the respondents). The remainder of the respondents came from either medium-sized communities (25,000 to 99,999) or small communities (5,000 to 24,999). The percentage of participants from the medium-sized communities formed 10% of the total participants, the small sized areas combined for 14% of the respondents, and as mentioned before, the rural, farm, or town population constituted 38% of the respondents to the survey.

Levels of education were examined to determine if a

TABLE 5

SOCIOECONOMIC DATA

City Size	Percent
large	38%
medium	10%
small	14%
rural, farm, or town	38%
Level of Education	**Percent**
less then high school	4%
high school graduate	28%
some college	32%
college graduate	30%
graduate school	6%
Household Income	**Percent**
Less then $5,000	0%
$5,001 to $10,000	8%
$10,001 to $20,000	22%
$20,001 to $30,000	18%
$30,001 to $50,000	36%
Greater then $50,000	16%

participant's scholastic experience is related to his/her concept of preservation (Table 5). Education levels were divided into five categories. Percentages of each group were calculated next. Only 4% of the respondents had less than a high school degree. Those who had received a high school diploma without advancing further made up 28% of those who participated in the research. Respondents with at least some college but less than a degree composed the largest category at 32%. Respondents to the survey who had a college undergraduate degree but did not go to graduate school consisted of 30% of the surveyed population. The last category comprised those who went, or are attending, graduate school. It is interesting that 36% of the survey population had at least a college degree and 68% of the respondents had some college while 52% of those surveyed resided in areas with a population of less than 25,000 people.

Annual income figures were collected and categorized from each survey respondent (Table 5). This information was collected in order to evaluate any relationships between preservation values and the level of a respondent's income. The first category included those people who had combined household earnings of five thousand dollars or less. None of the people surveyed fell into this classification. The next grouping had earnings of five thousand dollars but less than ten thousand dollars. Only 8% of the population fell

into this category. Those who had incomes between ten thousand dollars and twenty thousand dollars totaled 22% of the survey participants. Persons earning between twenty and thirty thousand dollars made up 18% of the survey population. The largest number of persons (36%) earned salaries between thirty thousand dollars and fifty thousand dollars. Those earning greater then fifty thousand dollars comprised 16% of the total group. One half of the participants had a reported combined household income of thirty thousand dollars or greater.

Computer Aided Statistical Methods

Data were collected at the nominal and ordinal level. The data were then arranged for statistical analysis. Replies to certain questions were transformed into categories or dichotomies so that Chi-square tests could be run on the responses. Continuous data were analyzed with the assistance of simple correlations.

An example of ordinal scale information is represented in the question of city size by population. These data were aggregated into four categories for the purposes of statistical analysis. The first category was rural, farm, or town and was represented by the number one. Small communities were represented by the number two, medium sized municipalities were assigned the number three, and large sized metropolitan areas were represented by the number

four.

Correlation Analysis

To discover the degree to which associations can be found among the variables, Pearson Correlation Analysis was employed. The purpose of correlation analysis is to explain variation in the dependent variable with the independent variable (Cody and Smith 1987).

Most of the correlations discovered between the variables dealt with the issue of preservation of the sites (question two of the survey). All seven of the selected research parks and recreation sites had a significant correlation with at least one other park and recreation area when analyzed with Pearson's Correlation Analysis (see Appendix C). If the public benefits from the preservation of each of these sites, this would suggest that preservation values are an important part of the entire value of each site.

While the correlation of visitation between two resource facilities was significant (Great Salt Plains and Alabaster Caverns), as mentioned earlier, there were no significant levels of correlation between resource dependent areas and the idea of preservation. Activity dependent areas, when compared to each other, had a total of five significant correlations. In fact, contrary to the

hypotheses, the greatest patterns of significance were found when observing the relationships between activity dependent and resource dependent areas. This indicates that the population feels that both resource and activity dependent areas are meaningful segments of the total recreation picture and both must be preserved to have areas for all to enjoy.

An important point found in the study is the relationship between the users of camping areas and fishing lakes. A correlation of .748 was found between these two variables. It is a common occurrence that many people who fish at a recreation area also camp at the same or other facilities. Oddly enough, the responses of these same people displayed no correlation with the preservation of a natural area.

The participants who did visit parks usually frequented more than one, be it for proximity reasons or for the love of the outdoors. The correlation between campers and fishermen also sheds light on the participants' views of natural areas.

Of great interest was that there were no socioeconomic variables from the survey that played a prominent role in the opinion of preservation from those surveyed. This may indicate that resource managers, when considering the apportioning of park and recreation budgets, may not necessarily need to pay heed to the socioeconomic factors of

society. The cost of visiting a facility proves to be a hinderance to no one.

Chi-square Results

Chi-square was used to determine the degree to which a significant association can be identified between two responses by evaluating expected and observed frequencies. The results displayed indicated the probability that such frequencies would be obtained by chance alone.

Table 7 exhibits the categorical data that had a probability of committing a Type I Error at the .050 level. This is interpreted as saying that only 5% of the time a Chi-square value as great as the one achieved could be obtained again by chance alone.

Age exhibits a significant relationship to Walsh's three preservation values of option, existence, and bequest. This can be interpreted to indicate that greater age means that a respondent has greater feelings toward the preservation of an area.

Option value had the greatest relationship with age (.001 level), while having the lowest mean by the respondents when asked to provide a scale of importance of preserving a given site (question 4 from survey). This also may be explained by the high median age of the respondents. As one grows older in age, the need to preserve a given site for the option of visiting the site oneself in the future is

TABLE 6

PROBABILITIES OF CHI-SQUARE ANALYSIS

Variables	Probability
Age * Option	.003
Age * Existence	.049
Age * Bequest	.049
Oklahoma Residence * Option	.001
City * Education	.023
City *Income	.009
Income * Existence	.018
Income * Bequest	.045
Fishing Lake * Natural Area	.010
Fishing Lake * Camping Area	.000
Camping Area * Existence	.010
Camping Area * Bequest	.000
Option * Existence	.015
Existence * Bequest	.000

not as great as it would be for a person who is of a younger age. The fact remains that is obviously a significant factor in the preservation of parks and recreation facilities.

Additionally, time of residence in the state of Oklahoma is significantly related to the option of preserving a state operated park or recreation area. This relationship may be illustrated by the fact that the longer one resides in one region the greater the potential for that person to have an affiliation with a facility. Therefore, the same theory of need for preservation may apply here as mentioned earlier. The older one grows in age, the less the need to preserve an environment for the option of visiting it. As stated earlier, existence, the need to preserve so that nature has a place to reside, and bequest, the need to preserve an area for future generations, have greater preservation appeal to those of greater age.

As one may expect, the size of the community where one resided was related to both education and income. Thus, the larger the size of the city, the greater the amount of education and income. There were only two instances where socioeconomic variables were shown to be associated with nonsocioeconomic variables.

The preservation variables of existence and bequest had a significant relationship with the economic variable of income. It can therefore be concluded that the greater a

person's income is, the stronger that person feels that a site should be preserved for existence and bequest values. If one has the fortune to have money beyond what is needed for everyday existence, then one may often choose to spend it in ways other lower income people may not. The option of visiting the site in the future is not as important to higher income people.

A strong relationship was also found between fishing lakes and both natural areas and camping areas (question 3). It appears that those who strongly support fishing lakes also possess strong feelings toward the preservation of both camping and natural facilities. This is probably because fishing is usually done in a natural area and may often be accompanied by camping. It also may be that those who enjoy the outdoors also respect it. What was strange was that those who support camping facilities do not necessarily demonstrate great feeling toward natural areas.

To further complicate matters, a significant relationship between camping and preservation values was discovered. While campers feel strongly about preservation, which is not odd itself, there was no significant relationship between natural areas and any of the preservation values.

It was also noticed that use value lacked significant relationships with any of the other variables. This suggests that the study's first hypothesis, which states

that preservation values have greater value to the public than use values, may be true. As was noted, preservation values had relationships with several variables that indicated the public's intrinsic benefit from preserving an area.

This leads to the second hypothesis, which states that a significant measurable difference exists between the ways in which the public supports the preservation of activity and resource dependent areas. Simple statistics show that Oklahomans feel that preservation values are more important than use values. This indicates that preservation values are an important part of the total value of state supported parks and recreational areas and should be included when assessing the benefits that are associated with a given area.

CHAPTER IV

CONCLUSION

Review of Research

The remarkable growth in outdoor parks and recreational areas over the past century have created a need for a process of estimating their economic value and enjoyment. These benefits are obtained for both the use and offsite use of facilities. Over the past few years, the need for the preservation of areas has grown in importance to Oklahomans. In fact, it was discovered that 95% of Oklahomans participate in some form of outdoor recreation (Fesenmaier and Schroeder 1983). The primary objective of this study was to measure the benefits of state parks and recreation areas in the state of Oklahoma accounting for both preservation (offsite use) values and onsite (use) values. It was discovered that the state does not consider offsite use when considering park and recreation budgets.

Research was conducted to define the benefits received from activity and resource dependent recreation areas to assist in the determination of how various areas should be financially supported.

Resource dependent and recreation dependent areas included in the research were also explored to determine the concern of Oklahomans in terms of preserving these facilities.

The hypotheses for the study were as follows:

1. Preservation values (nonuse) have a greater value to the general public than recreation values (use) in terms of why one should preserve a given area.
2. A significant difference will exist between how Oklahomans are willing to support the preservation of activity areas as opposed to resource dependent areas.

Interpretation of Results

Use and nonuse values of recreation were measured to determine the nature of how benefits are received by Oklahomans. As stated earlier, the preservation values all had significantly higher means than did use (recreation) values to the survey population. This indicates the importance of preserving areas for reasons other then use alone. The state of Oklahoma should include such values when considering the budgets of state parks and recreation areas.

It was shown in this research that there is a difference concerning how Oklahomans are willing to support the preservation of activity dependent areas and resource dependent areas. The responses to the questions in the

survey concerning preservation of areas indicate the importance of these areas to the citizens. Thus, this concludes that Oklahomans do possess a desire to preserve parks and recreational areas. There were no links, as thought prior to this research, between activity dependent areas and use values or resource dependent areas and preservation (offsite use) values.

The data also indicated that the cost of visiting a facility is presently a hinderance to no economic class. What was discovered is that the desires to preserve (preservation values) increases as one's income increases.

The study found that an activity dependent area should be equally supported by both the state and the users. Simultaneously, the respondents concluded that resource dependent areas should be supported with approximately 70% of their funds coming from the state and the remainder (30%) from those who actually visit the facilities.

This research concludes that the cost of supporting state parks and recreational areas should be divided between the users of the area as well as the state (nonusers). Nonusers of facilities are willing to support areas to preserve these places. How the cost should be divided is dependent on what type of facility is researched. If a facility is resource dependent, then it should receive greater support from the state than from users. When considering an activity dependent area, the costs should be

divided closely between users and nonusers. Thus, this evidence supports including preservation values when considering the costs of parks and recreational areas in the state of Oklahoma.

Call for Further Research

As discussed earlier, it was concluded that preservation values should be included as part of the total budget development process. Of course, use values are another important ingredient when determining the value of parks and recreation areas. Thus, use and nonuse values must both be considered to determine the complete value of sites. Guidelines of how to determine the percent of money that should come from users and nonusers for each individual facility would result. The first step in developing such a model for a given facility is to perform a random survey. It is obviously important to contact both the users and the nonusers of the facility. Information gathered should pertain to the budgeting of the given site. Questions much like those used in this study's questionnaire would be useful.

The next step should be in the interpreting of the gathered data. Simple statistics would indicate the difference of how the budget should be apportioned. A final report detailing the findings of the study could accompany the next year's budget request. The report should indicate

how the annual budget should be divided between the state from collected tax money and what percent should come from the users as direct use fees.

This study is the first known attempt to apply preservation values to state parks and recreational areas. Others have tested the use of preservation values to other types of resources, but as stated in Chapter II, not on parks or recreation areas.

Limitations of Research

The most obvious limitation is that only seven of the state parks in the state were a part of this research. These seven parks were used because of results from a student poll conducted at Oklahoma State University. The results of the poll displayed biases towards facilities in northeast Oklahoma and may have resulted in biased responses from the respondents. This may give incomplete data for the entire state supported system. If the application of preservation values is to be appreciated by park and recreation managers, then a closer examination should be completed for each facility.

Further application of preservation values may prove beneficial to both national and other state parks and recreation areas. Other situations where preservation values may play an undiscovered role are historic sites and monuments. Therefore, there is much to research using

preservation values as an indicator of intrinsic emotions that have otherwise gone unaccounted for.

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APPENDICES

APPENDIX A

PRESERVATION OF NATURAL RESOURCES

STUDENT POLL

PRESERVATION OF NATURAL RESOURCES

STUDENT POLL

List up to ten natural areas within the state of Oklahoma which have the greatest value to you. A natural area is considered a place which has a strong emotional value, even if you have never visited it, which compels you to preserve this area.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

APPENDIX B

QUESTIONNAIRE

QUESTIONNAIRE

Hi, may I speak to _____. My name is Tim Clark and I am a graduate student conducting research on state recreation areas as part the requirements for my degree at Oklahoma State University. Would you have five minutes to answer a few questions about the preservation of state recreation areas?

1. How many times have you visited:
   a. Alabaster Caverns _____
      How many times in the past year? _____

   b. Grand Lake _____
      How many times in the past year? _____

   c. Great Salt Plains _____
      How many times in the past year? _____

   d. Keystone Lake _____
      How many times in the past year? _____

   e. Little Sahara _____
      How many times in the past year? _____

   f. Red Rock Canyon _____
      How many times in the past year? _____

   g. Tenkiller Lake _____
      How many times in the past year? _____

2. Indicate the importance of <u>preserving</u> each of the following areas on a scale from one to ten (1-10) wit one (1) representing least important and ten (10) representing most important.

   a. Alabaster Caverns
   b. Grand Lake
   c. Great Slat Plains
   d. Keystone Lake
   e. Little Sahara
   f. Red Rock Canyon
   g. Tenkiller Lake

3. Recreation areas in Oklahoma are funded by those who use the areas and by revenues collected through state taxes. What percent do you feel the user of a recreation area

should provide and what percent do you believe the state should provide for the preservation of a ...

		Users	State
a.	Fishing Lake	_____%	_____%
b.	Natural Area	_____%	_____%
c.	Camping Area	_____%	_____%

4. Indicate the importance of the following reasons why one should preserve recreation areas on a scale from one to ten (1-10) with one (1) representing least import and ten (10) representing most important.

a. for the possible use of the area by you in the future (option)
b. for the knowledge that the area exists as natural habitat for both plant and animal life (existence)
c. for the knowledge that an area exists for future generations (bequest)
d. for the immediate use of an area by you (use)

5. Are you:
Male ____
Female ____

6. Do you belong to an environmental or sportsmen organization such as the Sierra Club, NRA, Greenpeace, Ducks Unlimited, or any other group?

Yes ____
No ____

7. What is your age?

8. How many years have you resided in Oklahoma?

9. Which best describes the city which you live in:

_____ large city (100,000-1,000,000)
_____ medium city (25,000-99,999)
_____ small city (5,000-24,999)

_____ rural, farm, or town (less then 4,999)

10. What is the highest level of education which you completed?

_____ less than high school
_____ high school
_____ some college
_____ college graduate
_____ graduate school

11. Was your household income in 1988:

_____ less then $5,000
_____ $5,001 to $10,000
_____ $10,001 to $20,000
_____ $20,001 to $30,000
_____ $30,001 to $50,000
_____ greater then $50,000

APPENDIX C

SIMPLE CORRELATION ANALYSIS

SIMPLE CORRELATION ANALYSIS

Variables	Correlation
Great Salt Plains (year) * Alabaster Caverns (lifetime)	.877
Grand Lake (lifetime) * Grand Lake (year)	.827
Keystone Lake (lifetime) * Keystone Lake (year)	.786
Grand Lake Preservation * Alabaster Caverns Preservation	.695
Great Salt Plains Preservation * Alabaster Caverns Preservation	.822
Grand Lake Preservation * Keystone Lake Preservation	.730
Alabaster Caverns Preservation * Keystone Lake Preservation	.654
Little Sahara Preservation * Keystone Lake Preservation	.665
Tenkiller Lake Preservation * Keystone Lake Preservation	.679
Great Salt Plains Preservation * Little Sahara Preservation	.729
Alabaster Caverns Preservation * Little Sahara Preservation	.727
Great Salt Plains Preservation * Red Rock Canyon Preservation	.810
Alabaster Caverns Preservation * Red Rock Canyon Preservation	.699
Little Sahara Preservation * Red Rock Canyon Preservation	.763
Grand Lake Preservation * Tenkiller Lake Preservation	.677

SIMPLE CORRELATION ANALYSIS

Variables	Correlation
Camping Areas (users) * Fishing Lake (users)	.748
Oklahoma Resident * Age	.785

VITA

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