

**RECREATION AND WILDERNESS:
PARTICIPATION AND ECONOMIC
SIGNIFICANCE IN SASKATCHEWAN**

K.G. LOEWEN

and

S.N. KULSHRESHTHA

DEPARTMENT OF AGRICULTURAL ECONOMICS

UNIVERSITY OF SASKATCHEWAN

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P.O. Box 2406

Prince Albert, SK S6V 7G3

Telephone: (306) 922-1944

Fax: (306) 763-6456

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Kurt G. Loewen

Professional Research Associate

and

Surendra N. Kulshreshtha

Professor of Agricultural Economics

Department of Agricultural Economics

University of Saskatchewan

51 Campus Drive

Saskatoon, SK, S7N 5A8

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P.O. Box 2406, Prince Albert, SK, S6V 7G3

ABSTRACT

Preserved wilderness in Saskatchewan has value to both the users - those who use it and to non-users - those who may never visit but still may derive some value from it. For this reason, aggregate nonuse values can be substantial. A contingent valuation method was employed in this study to determine the willingness-to-pay (WTP) for wilderness preservation by Saskatchewan residents.

A Tobit analysis was performed on the obtained bids. This analysis suggested that education is a significant positive influence on an individual's WTP. Those involved in activities such as snowmobiling, canoeing and cross country skiing also had a higher WTP. In fact, the level of WTP increased as such activities increased in significance. Respondents who are satisfied with the current levels of wilderness protection, and those who have not been associated with a preservation group in the past 5 years had a negative influence on the level of WTP. Income had a positive correlation with WTP, while age had a negative correlation. Income and age did not factor into the Tobit analysis, however.

The most significant recreational activities to Saskatchewan residents were walking, viewing wildlife, fishing, camping, picnicking, swimming and boating. Emma Lake and Christopher Lake, Prince Albert National Park, and Candle Lake were the most popular recreation areas. The combination of the wilderness present within the park boundary and the town of Waskesiu was an attractive feature of the Prince Albert National Park. However, the use of a cabin elsewhere, park congestion, commercialization and expense were common reasons why some respondents did not want to visit the park more.

The study suggests that 58% of sample respondents were satisfied with the current level of wilderness and wildlife protection in the province. The remaining 42% wanted more protection. Their reasons for preserving wilderness areas varied but protection of water quality, air quality, and wildlife habitats topped the list.

The estimated annual WTP to ensure current wilderness protection prevails was approximately \$61 per household. However, 44% of sample respondents did not offer a positive non-zero bid for preservation. Saskatchewan residents affiliated with a wilderness or wildlife group in the past 5 years had higher WTP, about double that of residents not associated with such groups. The non-use value of the wilderness was estimated by netting out the use related value. Thus, Saskatchewan residents are willing to pay up to \$15.3 million annually to preserve the eight million acres of wilderness in the province.

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Chapter 1

INTRODUCTION

1.1 Need for the Study

Wilderness provides numerous benefits, many of which are not related to economic activity, such as aesthetic and environmental benefits. Some of the economic value of wilderness in northern Saskatchewan consists of direct benefits to users of such regions while other economic values may be associated with non-users. For a public resource like wilderness, there are users who derive value from use and non-use of a resource and there are non-users of the resource who experience a sense of satisfaction from the fact that wilderness is there and will be there for the future. Neglecting non-use benefits in multiple use management of a resource could lead to mismanagement of the resource. Once estimated preservation values of such resources are determined, these values can add valuable information into the management process of such multiple use resources, particularly under an integrated resource management philosophy. Since this information is not available for Saskatchewan, and in particular for the Prince Albert National Park, this study was undertaken. Empirical estimates of value of wilderness preservation should assist in the management not only of the park, but also of forest lands.

Approximately 5% (8 million acres) of Saskatchewan is considered protected as wildlife and nature reserves, parks and historical sites (Lawton and Hickie 1993). Prince Albert National Park, (PANP), is a prominent Saskatchewan nature conservation and wildlife refuge area. Because PANP, other parks and protected areas are not traded in the market place, they do not have an explicit economic value assigned to them. Estimation of these values must therefore be carried out using non-market valuation procedures.

1.2 Objective and Scope of the Study

The primary objectives of this study were to develop and apply a procedure for measuring the benefits of wilderness resources to residents of Saskatchewan. In addition, this study was also designed to analyze characteristics of the respondents regarding their recreation activities and wilderness preferences.

The above objectives were achieved through a survey of Saskatchewan residents. Results are, thus, specific to the region surveyed.

1.3 Organization of the Study

This study is organized into 8 chapters. Chapter 2 provides a review of non-use and use value as a part of the total economic value of natural resources. In chapter 3, measurement of non-use values is discussed, which is followed in chapter 4, by study methodology. General recreation patterns and participation are summarized in chapter 5, while chapter 6 focuses on the use of Prince Albert National Park. Chapter 7 presents results regarding wilderness valuation, followed by conclusions for the study in the last chapter.

Chapter 2

ECONOMIC VALUE OF WILDERNESS

Economic value of a natural resource, such as wilderness, is discussed in this Chapter. Various types of non-use values are emphasized here. This Chapter is divided in 2 sections. Social value of wilderness is presented in section 2.1, followed by that for total economic value which is discussed in section 2.2. This is followed by a discussion of use and non-use values in sections 2.3 and 2.4, respectively.

2.1 Social Value Of Wilderness

Aside from private benefits to recreationists and resource users, wilderness can provide a wide range of public benefits. Generally wilderness areas contain forests. The term "forest" does not only define trees, but forest ecosystems that also include soils, water, animals, microorganisms and other plants. Table 2.1 provides a summary of the benefits of a forest. Production, regulation, information and supply functions of the forest result in a variety of public benefits. Oxygen, water and genetic resources are examples of production benefits, while climate regulation, biodiversity and soil erosion control describe some regulatory benefits. Spiritual, cultural, educational and aesthetic aspects of the forest define information benefits. Recreation and forestry in part describe supply benefits.

Two broad interdependent categories of benefits of wilderness preservation are biological diversity and environmental services. Biological diversity consists of species, ecosystem and genetic diversity which are essential to human existence. There are economic, scientific, aesthetic

**Table 2.1:
 Benefits of the Forest Resources**

FOREST			
RESOURCES	ESSENTIAL LIFE SUPPORT SYSTEMS	INTELLECTUAL DEVELOPMENT & RECREATION	SPACE FOR HUMAN ACTIVITY
<i>PRODUCTION FUNCTIONS</i>	<i>REGULATION FUNCTIONS</i>	<i>INFORMATION FUNCTIONS</i>	<i>CARRIER FUNCTIONS</i>
Oxygen	Climate Regulation	Aesthetics	Habitation
Water	Erosion Control	Spiritual/ Religious	Forestry
Building Material	Energy Storage	Cultural/ Artistic	Recreation
Fuel and Energy	Biodiversity	Education/ Science	Industry
Bio and Medicinal Products	Wildlife and Aquatic Habitats	Potential Options	Hunting, Fishing and Trapping
Genetic Resources	Watershed Protection		
Wood Supply			
Recreation Habitat Supply			

" Source: Saskatchewan Environment and Resource Management and Forestry Canada (1993).

and ethical reasons supporting the preservation of biological diversity. Agriculture, fisheries, energy, water supply, public health, recreation and tourism and climatic stability are the major environmental services from wilderness preservation. It is quite evident that wilderness provides much more than economic values.

2.2 Total Economic Value of Wilderness

Establishing a price or value of non-market experiences is difficult because there is no organized market where these types of goods are traded. However, this is not to suggest that such experiences have no value, since members of society have some perceptions of their benefits.

Benefits of non-market experiences include those originally through use and those through non-use. Use values are related to an activity where the expenditure of time and/or money is involved. An example of this would be outdoor recreation. Use values of non-market experiences result from either consumptive uses of a resource (i.e., fishing or hunting) or from nonconsumptive uses such as hiking, skiing or canoeing. Use values may accrue from past, present and/or future use of the resource. Use values may be direct or indirect. A direct use of a preserved wilderness area would be recreation and an indirect use might be driving through the aesthetically pleasing environment. Non-use values are not related to any use. To gain utility from the maintenance or element of a resource, one does not have to visit the resource. Non-use values result from the sense of satisfaction that the natural resource will be preserved and that others can use the resource now and in the future.

The aggregate level of non-use values can be significant in the presence of the following: (1) long-term or irreversible damage to a resource occurs if the consumptive development option is chosen, (2) the resource (i.e., forest) is unique; and (3) the resource is well known (Harvard Law Review 1992). Ignoring sizeable non-use values in natural resource policy making could lead to resource misallocation. However, substitutes prevent sizable non-use values provided such substitutes are acceptable to respondents. A lack of knowledge about the resource also leads to lower non-use values. If one is unaware of a resource, one cannot attach a (nonuse) value to it.

2.3 Estimation of Use Values

Use related values from forests are derived from market and non-market experiences. An indication of the value society places on a market good is price. However, price underestimates the value of non-market experiences (i.e., wilderness recreation), which can be divided into consumptive uses such as fishing and non-consumptive uses such as hiking. Due to the lack of market representation, alternative means of measuring value are sought. A popular estimate of economic value for non-market goods is the concept of consumer surplus, which is the amount people are net willing-to-pay for the good, rather than going without it. The net willingness-to-pay is measured relative to a reference point, such as the current market price facing consumers.

Both the contingent valuation method (CVM) and the travel cost method (TCM) are economic valuation techniques that attempt to measure benefits of non-market experiences. Loewen and Kulshreshtha (1995) provides a review of these valuation techniques.

2.4 Estimation of Non-use Value

Since one of the objectives of this study is to estimate non-use values for the Prince Albert Model Forest, a review of past approaches to measurement of such values is provided in this section. The major method of estimation used in this context is the contingent valuation method, which is described in section 2.4.3.

2.4.1 Concept of Non-use Value

Many attempts have been made in the past to estimate non-use values such as for the preservation of environmental assets. However, no one single economic model is able to

encompass all the use and non-use values resulting from nonmarket experiences. In the economic literature nonuse, existence and preservation values have been used interchangeably (Freeman 1993). Van Kooten (1993) suggests that resources may have nonuse value that consists of option, bequest and existence demands. Krutilla (1967) and Wiesbrod (1964) are largely responsible for early literature on non-use values. They focused almost exclusively on option and bequest values. A willingness to pay acting as an insurance policy to keep the possibility open of someday using the resource creates an option value. Bequest values reflect the value of knowing that wilderness will be available to future generations. The mere knowledge that wilderness exists constitutes an existence value. Sutherland and Walsh (1985) define preservation value to be the aggregate sum of bequest, existence and option values. Suppose an allocation decision is to be made for an area: either use an area, with no close substitutes, in a manner compatible with the preservation of its natural environment, or produce commercial goods from this area. The market will not be an efficient selector of uses when preservation is considered mainly due to the bequest, existence and option values that are extremely difficult to measure quantitatively when no natural market exists for public goods (Cicchetti and Wilde 1992).

2.4.2 Review of Alternate Methods of Estimation

Non-use values arise from a variety of motives, namely, bequest, existence and option demands. In addition, one should note that just because an individual uses a resource does not imply that this individual does not have a non-use value for the resource. A proxy for non-use value would be value placed on preservation. The value non-users place on a resource is an estimate of their preservation value. However, determining and isolating non-users of a resource

such as wilderness is difficult. For resource users, there is no arbitrary way to determine that amount which is attributable to the mere preservation of the resource (Freeman 1993). The use value of a resource can be estimated by the travel cost method or by contingent valuation method thus subtracting this value from the total value would result in an estimated non-use value.

2.4.3 CVM Apmach

The contingency valuation method is used to estimate use and/or non-use values of natural resources by estimating a Hicksian demand curve. A hypothetical market is created and responses to this market are then elicited.

There are a few different types of CVM that have been employed. Open-ended (continuous), dichotomous choice, double-bounded dichotomous choice, and trichotomous choice are a few of the survey techniques used to determine willingness-to-pay (WTP) or willingness-to-accept (WTA) compensation for changes in the availability of a public good. Dichotomous choice models (also referred to as referendum surveys or discrete choice models) seem to be the most preferred contingency valuation models (Kristrom 1993; Cameron 1987). Because this method depends on individuals to factor in their own percents in the hypothetical market, biases are difficult to avoid.

Recently, there has been much discussion in the literature on which method, open-ended (continuous valuation question) or closed-ended (discrete valuation question) valuation techniques, produce more reliable results. Certainly there are advantages and disadvantages of both. There are three main advantages of the dichotomous over the continuous model. The first advantage is the more market-like environment/situation that the respondent is placed in. Rather than

formulating a maximum willingness-to-pay, the respondent simply responds yes or no to the quantity suggested by the survey instrument. A study by Cameron (1987) suggests hypothetical bias and strategic bias may be mutually exclusive. If a respondent perceives the situation to be hypothetical there is likely no reason for strategy and vice versa. Careful survey design with high realism and low consequences can negate or minimize the bias.

When responding to contingent valuation questions people tend to construct values at the time asked (Schkade and Payne 1994). Typically, the less experience a respondent has in valuing non-market experiences, the greater influence information bias will have. In the dichotomous choice model, the survey instrument has less opportunity to influence the respondent and the respondent has less opportunity to strategically bias his/her response. The third advantage of dichotomous choice is that it is easier to perform (Loomis 1988). Answering yes or no is less stressful than trying to formulate a maximum WTP. Vehicle bias may exist in both cases. The respondent must be familiar with the setting and the vehicle payment must be realistic, otherwise biased responses and/or large numbers of protest responses will influence estimates (Johnson, Breggenzer and Shelby 1994).

The drawbacks of the dichotomous method are the larger sample size required, complexity and sensitivity of the results to the specified functional form (Cooper and Loomis 1992; Loomis 1988). The mean willingness-to-pay can be calculated directly from continuous or iterative CVM questions, whereas the discrete method requires an inference about the pattern or probability distribution of yes and no responses at differing amounts. Different specified functional forms can lead to different expected mean willingness-to-pay values. Also, the potential exists for anchoring, whereby the respondent might be influenced by the stated amount,

similar to starting point bias (Kristrom 1993). If the suggested bid is higher or lower than the true willingness-to-pay, then the potential to bias responses upwards or downwards exists.

Kristrom (1993) found that dichotomous models lead to higher mean values than continuous models; however, theory offers little input as to why. Kealy and Turner (1993) discovered dichotomous models results to be 1.4 to 2.5 times as large as those based on continuous models. Kealy, Dovidio and Rochel (1988) in another study found no significant difference between the two methods. There is no conclusive evidence indicating which method is best (Kristrom 1993, Kealy and Turner 1993).

There has also been some disagreement with respect to welfare measures corresponding to the mean or mode. McCollum, Gilbert and Peterson (1990) argue that extreme values are legitimate expressions of economic value and that the mean should be used. Hanemann (1984) argues that the use of median values are "likely to be more robust with respect to errors and outliers in the experimental responses" (p.333).

Embedding can be a problem with any CVM. For example, assume a study is trying to value two things: (1) all wildlife and, (2) grizzly bear. If the same individuals are asked to value both, all wildlife would be valued higher than grizzly bear. This makes sense because the grizzly bear are a subset of all wildlife. However, suppose one group is asked to value wildlife and another to value grizzly bear, their values have been shown, by some researchers, to not differ. This would imply that these values are dependent on question order. It is this type of result that has led Kahneman and Knetsch (1992) to suggest that the individuals are paying for moral satisfaction. Caution must be exercised when valuing any natural resource particularly subsets of a larger classification.

Chapter 3

STUDY METHODOLOGY

A review of procedures used in the estimation of economic significance of recreation and wilderness in the Prince Albert Model Forest region in this study is provided in this chapter. The chapter is divided into two sections: In Section 3.1 a brief discussion of the non-use value of wilderness and its estimation is provided, while in Section 3.2, a review of the survey design, sampling design and response rates is provided.

3.1 Concept of Non-use Value of Wilderness and Method of Estimation

The pure existence or preservation value of wilderness defines its non-use value, which primarily consists of existence and bequest demands. A direct method available to estimate these values is the contingency valuation technique. An open-ended contingency valuation approach was employed in this study to determine Saskatchewan residents WTP for preservation. The payment method was a contribution into a special fund designed specifically for the purpose of preserving and maintaining wilderness. This method of payment was selected for two reasons: (1) Saskatchewan residents are familiar with contributions made for specific purposes (i.e., charities and environmental groups); and (2) This method is relatively neutral and furthermore, it was felt that an entrance fee or tax would likely result in numerous protest responses. To avoid strategic bias in the responses, the participants were informed that the question being posed was depicting a totally hypothetical situation.

3.2 Data Collection

3.2.1 Survey Design

During the spring/summer of 1994 a questionnaire was developed and distributed to a random sample of urban Saskatchewan residents. The questionnaire study focussed on wilderness and recreation by Saskatchewan residents. The survey was designed to elicit demographic, economic, attitudinal and behavioral information from residents. Surveys were pre-tested using economists, students and the general public. The questionnaire, in Appendix A, can be divided into 4 main sections. Section 1, questions 1 through 7, focuses on the significance of outdoor recreational activities and location of participation. The next section, questions 8 and 9, identifies the more significant features of the Prince Albert National Park, while the third section, questions 10 to 17, elicits wilderness and wildlife related information from the respondents. The last section, questions 18 to 26, focuses on demographics.

3.2.2 Sampling Design

Survey distribution was achieved through the postal service. The province was divided into 4 zones from which random samples were generated via telephone directories. TargetWest performed the random sampling and provided the address labels. Initially 200 surveys were sent out to each of Zone 2 (Saskatoon, Yorkton, Melville), Zone 3 (Regina, Swift Current, Moose Jaw, Weyburn and Estevan) and Zone 4 (North Battleford, Lloydminster, Meadow Lake and Kindersley) and 250 surveys were sent to Zone 1 (Prince Albert). For some regions, response rates were higher. For this reason, in a second mailing, 200 surveys were sent to Prince Albert, 100 to Saskatoon and

100 to North Battleford. These three zones were the focus because it was assumed that a higher portion of their residents would have visited Prince Albert National Park.

The first mailing of 850 surveys was distributed throughout the province in early August 1994. Another mailing of 400 surveys was distributed in early October 1994 to three target areas, namely, Prince Albert, Saskatoon and North Battleford. Residents received a survey with a cover letter outlining the intent of the survey and a postage paid return envelope.

3.2.3 Response Rates

The survey response rates varied substantially from zone to zone. Response rates ranged from 14.7% from Zone 4 to 22.7% from Zone 1 (see Table 3.1). Generally, the closer one resided to Prince Albert National Park the more likely the subject was to return the survey. This may indicate that awareness of and concern for wilderness and recreation increases as one moves northward through Saskatchewan or that the title of the survey may have had some influential results. The wilderness and recreation questionnaires were distributed to the general urban public, thus explaining a relatively low response rate. Response rates are typically higher when a specific interest group is targeted.

Of the surveys returned, 38 were not useable for estimation of resource value because too many questions were left unanswered. Respondents who answered \$0 wtp were asked for a reason for their response, thus allowing the identification of 7 protest bids which were excluded from the CVM analysis. The useable return rate was 16% (see Table 3.2).

**Table 3.1:
 Response Rates for the PAMF Wilderness and Recreation Survey**

Zone and Locality	Mailing One			Mailing Two			Total Returns
	Sent ^a	Returns	Return Rates	Sent ^a	Returns	Return Rates	Response Rates
ZONE 1 Prince Albert	249	57	22.9%	192	43	22.4%	100 ----- (22.7%)
ZONE 2 Saskatoon Yorkton Melville	199 174 25 0	38 37 1 0	19.1%	87 87 0 0	21 21	24.1%	59 ----- (20.6%)
ZONE 3 North Battleford Lloydminster Meadow Lake Kindersly	198 116 43 27 12	39 25 7 2 5	19.7%	94 94 0 0 0	11 11	11.7%	50 ----- (17.1%)
ZONE 4 Regina Moose Jaw Swift Current Weyburn Estevan	197 127 30 23 11 6	29 14 6 6 3 0	14.7%	0 0 0 0 0 0			29 ----- (14.7%)
Total	843	163	19.3%	373	75	20.1%	238 ----- (19.6%)

^aSurveys sent represent the number of surveys actually delivered.

Figures 3.1 and 3.2 illustrate the distribution by zone of the delivered surveys and the returned surveys, respectively. Zone 1 (PA region) received 36 percent of the surveys, but 42 percent of responses.

Table 3.2: Useable Surveys and Sample Size

	Number	Percent
Total Surveys Sent	1216	100%
Total Surveys Returned	238	19.6%
Useable Surveys	193	15.9%

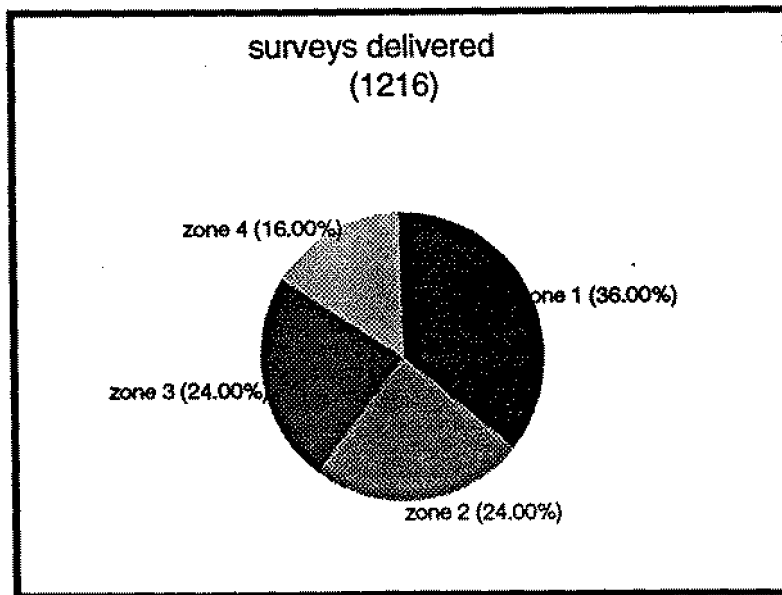


Figure 3.2: Distribution of Mailed Surveys

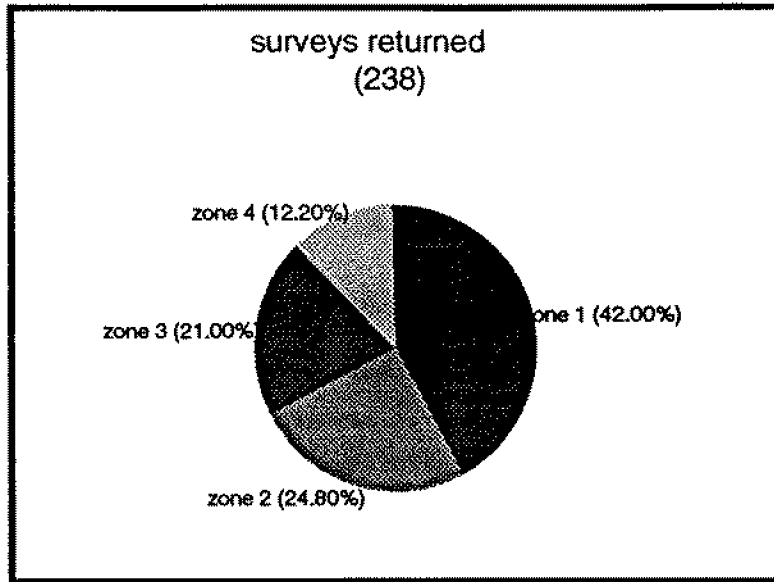


Figure 3.2: Origin of Surveys Returned.

Chapter 4

RECREATION USE AND PARTICIPATION

The major objective of this chapter is to provide an overview of sample respondents' characteristics. Their use pattern of northern wilderness sites (primarily the Prince Albert National Park) and other provincial facilities is also described here.

4.1 Characterization of Sample Respondents

The average study respondent was 45 years of age, had a household size under 3 persons and a household income of slightly more than \$46,000. The average education level of the respondents was near 13 years. This would indicate that on average respondents have had a year of post secondary education. The mean number of children under 16 years of age per household was under 1, while the average household size was 2.7 persons. Nearly a quarter of those surveyed were retired. Table 4.1 summarizes the general characteristics of the residents surveyed. The 1991 census suggests that an average urban Saskatchewan resident had an education of slightly more than 13 years and an income of \$41,000. The average number of people per household was equal to the survey mean. Also in 1991, 63% of the population was considered urban. In comparison, it would appear that the sample was similar to the average Saskatchewan family.

4.2 Outdoor Activities

Most recreational trips involved a multitude of activities. Walking, viewing wildlife, fishing, camping, picnicking, swimming and boating were the most significant activities that Saskatchewan

**Table 4.1:
 Summary of Characteristics of Study Sample**

Item	Mean*	Minimum	Maximum
Household Income	\$45,781	\$5,000	\$95,000
Age	45.29 years	17.00	87.00
Education	13.37 years	8.00	20.00
Household Size	2.70	1.00	7.00
Children (< 16)	0.64	0.00	6.00
Retired	22%	n.a.	n.a.

* Based on a sample size of 192 recreationalists.

residents participated in. The least significant activities were tennis, snowshoeing, sailing/windsurfing and horseback riding. Cross-country skiing and ice fishing were the most important wintertime outdoor activities. Hunting had the largest standard deviation because of the large number of extreme responses. Nearly 60% of respondents indicated that hunting was not at all important, while another 23% felt hunting was very important. A scale of 1 (not at all important) to 5 (very important) was used to measure the significance of the activities. Responses to the survey question related to the significance of recreational activities are presented in Table 4.2.

Activities that were participated in by over 49% of the respondents, presented in descending order of participation rates, were walking, picnicking, wildlife viewing, camping, swimming, photography, boating, fishing, hiking, sunbathing and golfing. As would be expected these same activities had the highest participation rates (more than 44% of all respondents) within Saskatchewan, although the order was slightly altered with photography and hiking being the least participated in of

Table 4.2:
Importance of Each Recreational Activity^a by Sample Respondents

Activity	Mean^b	St. Dev	Activity	Mean^b	St. Dev
Walking	3.91	1.09	Cross-Country Skiing	2.57	1.40
Viewing Wildlife	3.71	1.18	Ice Fishing	2.52	1.50
Fishing	3.60	1.47	Sunbathing	2.43	1.34
Camping	3.54	1.37	Downhill Skiing	2.38	1.50
Swimming	3.42	1.32	Snowmobiling	2.18	1.42
Picnicking	3.40	1.22	Hunting	2.16	1.63
Boating	3.26	1.44	Mountain Biking	2.10	1.22
Hiking	2.97	1.33	Sailing/ Windsurfing	1.95	1.21
Photography	2.86	1.17	Horseback Riding	1.86	1.11
Golfing	2.75	1.50	Tennis	1.65	1.04
Canoeing/ Kayaking	2.63	1.39	Snowshoeing	1.62	1.02
Water Skiing/ Tubing	2.59	1.44			

^a A scale of 1 (not at all important) to 5 (extremely important) is used.

^b Based on a sample of 208 respondents.

the aforementioned activities. Walking, viewing wildlife and picnicking in Prince Albert National Park were participated in by over 20% of the respondents. Outdoor activity participation rates outside of Saskatchewan but in Canada ranged from 34% for walking to 0% for snowshoeing. The five activities with the highest participation rates were walking, photography (27%), wildlife viewing

(26%), camping (20%) and hiking (19%). The activities most frequently participated in outside of Canada by respondents were walking (13%) and photography (12%), followed somewhat distantly by wildlife viewing, hiking, sunbathing, golfing, swimming, picnicking and camping, all ranging from 4-8%. Downhill skiing was the only activity in which respondents participated in Canada outside Saskatchewan and in Saskatchewan at fairly similar rates. For every other activity, participation in Saskatchewan dominated. A complete summary of all the studied activities and their respective participation rates in the four locations is presented in Table 4.3.

As many respondents visited other provinces as visited Prince Albert National Park during the non-winter months of April to October. Non-winter trips were made by 88% of respondents while 52% made a winter trip (November to March) in the 1993-94 year. Table 4.4 presents the average trips taken and the average length of trips to four areas in the last year. The averages are for those respondents who actually made a trip to the specified location during the indicated time.

It is interesting to note that those visiting the PANP were similar in numbers to those visiting other Canadian facilities.

4.3 Prince Albert National Park in Comparison

The following averages exclude those 16% of respondents who did not spend any time in Saskatchewan recreation areas. The most popular central/northern Saskatchewan recreation area was Emma and Christopher Lakes where on average respondents spent 5.24 days in the past year. Prince Albert National Park and Candle Lake were the next most frequented recreation areas, visited on average about 4 days. Meadow Lake and Lac La Ronge averaged 1.5 to 2 visitor days in the past

Table 4.3:
Percent of Sample Respondents Participating at Specified Location during 1993/94*

Activity	In PANP	In Sask	In Canada Out of Sask.	Outside Canada	not participating
Walking	30	81	34	13	14
Picnicking	21	67	16	5	30
Viewing Wildlife	22	61	26	8	33
Camping	13	60	20	4	35
Swimming	17	61	15	6	35
Photography	15	45	27	12	36
Boating	13	62	7	2	37
Fishing	11	60	8	2	37
Hiking	17	47	19	8	46
Sunbathing	16	52	11	7	48
Golfing	13	49	12	7	50
Water Skiing/Tubing	6	31	1	1	70
Ice Fishing	1	30	1	0	70
Snowmobiling	0	25	1	1	75
Cross-Country Skiing	4	22	1	1	78
Mountain Biking	4	20	3	2	78
Hunting	0	22	0	0	78
Downhill Skiing	0	15	10	1	81
Canoeing/Kayaking	3	19	2	1	81
Tennis	1	11	2	2	89
Horseback Riding	2	10	2	1	90
Sailing/Windsurfing	1	8	1	1	91
Snowshoeing	0	2	0	0	98

* Numbers would not add to 100 since multiple sites are used for each activity.

Table 4.4:
Average Number of Trips and Length of Trips in the Past Year^a for the Study Sample

Item	PANP	Elsewhere in Sask.	in Canada Out of Sask.	Out of Canada
TRIPS non-winter (April-Oct.)	3.3 (97)	9.2 (154)	1.7 (97)	1.1 (26)
winter (Nov.-March)	2.2 (22)	6.8 (85)	1.5 (37)	1.0 (23)
LENGTH non-winter (April-Oct.)	2.9	3.5	7.8	10.5
winter (Nov.-March)	1.5	2.3	6.7	32.50

^a Averages are for those who made a trip to the specified location and the numbers in parenthesis represent the number of respondents making a trip to the indicated location.

year. Of the respondents visiting at least one recreation area in Saskatchewan, 49% visited Prince Albert National Park. The average total number of days spent in a Saskatchewan recreation area in the past year was 23.5 days. Table 4.5 provides a summary of visited recreation areas.

Of those responding to why they do not participate in more outdoor activities, nearly half felt that the expense of such participation was too high. About a third of the respondents indicated that they could not afford the time to participate in more activities and a tenth reported that the bugs were a reason why they did not participate more (see Table 4.6). Those who felt that they were not outdoors people represented about 5% of such responses and only 2% previously had bad outdoor experiences.

4.4 Use of Prince Albert National Park for Recreation

The Prince Albert National Park is one of the more popular northern Saskatchewan destinations. Since the PANP's inception in 1927, the number of visitors has steadily increased from about 5,000 from April 1928 to March 1929, to about 140,000 30 years later, to over 150,000 annually since the mid 1970's (SENTAR 1993). Visitation peaked during the 1984/85 season at over 300,000. Park visitation was high during the National Park Centennial which partly coincided with

Table 4.5: Average Estimated Days Spent in Various Recreation Sites by Sample Respondents^a

Recreation Areas	Days	St. Dev.
Emma/Christopher Lakes	5.24	14.36
Prince Albert Nat. Park	3.81	12.41
Candle Lake	3.76	13.91
Meadow Lake	1.82	7.20
Lac La Ronge	1.51	4.64
Narrow Hills	0.77	7.15
Anglin Lake	0.49	2.18
Greenwater Lake	0.33	1.93
Big River Area	0.31	1.08
Cypress Hills	0.31	1.03
Duck Mountain	0.10	0.61
Moose Mountain	0.09	0.58
McPhee Lake	0.09	0.42
Other	4.88	11.96
Total	23.53	25.92

^a Averages are for those who spent some time in a recreation area in 1993/94 (84% spent some time in a recreation area).

this period. According to Parks Canada Visitor Use Statistics (1992-1993), visitation to PANP has been fluctuating between 170,000 and 200,000 person visits annually over the period 1988 to 1993. This range of person visits translates to about 650,000 to 800,000 person-visit-days annually. In 1993 about 45% of park visitation in Saskatchewan occurred north of Saskatoon compared to approximately 30% in the mid 1970's (Saskatchewan Parks 1993; Tourism and Renewable Resource Saskatchewan 1974; Parks Canada 1973/74 and 1992/93).

**Table 4.6:
Reasons For Not Participating More in
Recreational Activity by Sample Residents**

Reason	Mean	St. Dev.
Too Expensive	49	0.50
Too Busy	31	0.46
Not Able	15	0.35
Bugs	10	0.30
Not An Outdoors Person	5	0.22
Bad Experiences	2	0.13

4.4.1 Features of the Prince Albert National Park

The Prince Albert National Park is the location of much of the recreational activity occurring in the Prince Albert Model Forest region. Respondents who wished to visit Prince Albert National Park more were directed to a question on the importance of park features. Features of most significance to these respondents were scenery, lakes and forest, followed by wildlife, beaches, camping and picnic facilities and the grocery store. Of moderate significance were the Waskesiu

townsite, accommodations, restaurants, hiking trails and the golf course. Relatively insignificant features were the tennis courts, riding stables, liquor store and bar, and the paddlewheeler. Table 4.7 lists the significance of Prince Albert National Park features. In general, the wilderness setting was of foremost importance to park visitors, followed by some commercial aspects of the park.

**Table 4.7:
 Importance of Park Features to the PANP Visitors^a**

Features	Mean	Std. Dev	Features	Mean^b	Std. Dev
Scenery	4.72	0.52	Restaurants	3.62	1.13
Lakes	4.70	0.61	Bear	3.57	1.40
Forest	4.63	0.69	Accommodations	3.57	1.35
Birds	4.11	1.09	Hiking Trails	3.57	1.22
Other Wildlife	4.10	1.04	Golf Course	3.27	1.52
Beaches	4.09	1.06	Boat Launch	3.12	1.46
Picnic Facilities	4.06	0.98	Trailer Park	3.07	1.54
Camping Facilities	4.02	1.26	Boat Dock	3.06	1.46
Outside Town	3.98	0.89	Rental Service	2.89	1.31
Moose	3.88	1.16	Grey Owl's Cabin	2.88	1.32
Grocery Store	3.84	1.11	Paddlewheeler	2.52	1.18
Fish	3.73	1.37	Bar/Liquor	2.49	1.24
Bison	3.68	1.20	Riding Stable	2.20	1.10
Waskesiu Town	3.62	1.10	Tennis Courts	2.00	1.17

^a A scale of 1 (not at all important) to 5 (extremely important) is used.

^b Based on a sample of 90 observations.

Apparently, the combination of the wilderness and the town site was quite an attractive feature of the park. Interestingly, the liquor store and bar were relatively unimportant features of the park.

4.4.2 Use of the Park

Of the Saskatchewan residents surveyed, 52% indicated that they did not wish to visit Prince Albert National Park more. Hence, reasons for not wanting to visit the park more were sought. The most popular reason, chosen 43% of the time, was that the respondent had access to a cabin elsewhere (Table 4.8). The distance to and cost, commercialization and crowdedness of the park were the next popular choices ranging from a 23% to a 36% selection rate. Poor park facilities (2% selection) and lack of knowledge about the park (3% selection) were the least commonly chosen reasons. The prohibition of snowmobiling in the park resulted in a 10% selection rate and the prohibition of hunting was selected about 7% of the time as reasons why the respondent did not want to visit the park more. Respondents were able to select more than one option. The results are shown in Table 4.8.

Table 4.8:
Reasons for Not Wanting to Visit PANP More ^a

Reason	Mean ^b	St.Dev
Own or use cabin elsewhere	43%	0.50
Too expensive	36%	0.48
Too developed/commercialized	27%	0.45
Too far	25%	0.43
Too congested	23%	0.42
Not enough time	17%	0.38
Other parks are better	12%	0.32
Snowmobiling prohibited	10%	0.30
Hunting prohibited	7%	0.25
Already spend enough time there	4%	0.19
Did not know about the park	3%	0.17
Poor facilities	2%	0.14

^a Responses do not add up to 100% because respondents were able to choose more than one reason.

^b Based on a sample size of 104 observations.

Chapter 5

ESTIMATION OF VALUE OF WILDERNESS

This chapter provides an estimate of value of preserving wilderness in Saskatchewan. The chapter begins with the reasons respondents have to preserve such lands. The rest of the chapter is devoted to estimation of the economic value of wilderness preservation.

5.1 Motivations for Preservation

Sample residents were first asked their own personal reason(s) for preserving wilderness areas. The most significant reasons for preserving wilderness were for the purposes of protecting water and air quality, rare and endangered species and wildlife habitats. These were closely followed by the reason of preserving it for future generations--a concept very close to the bequest value. Providing spiritual inspiration and tourism dollars were the least important of the reasons to preserve, however, they were definitely not unimportant reasons. The significance of reasons to preserve are displayed in Table 5.1. It must be noted, however, all motivations had a mean score of 3 or more, indicating they were positive motivations towards preservation of wilderness.

It was hypothesized that motivations for preservation may lead to membership in such groups. When asked this question, in the past year, 36% and, in the past 5 years, 44% of respondents had some involvement in wilderness and wildlife groups. About a fifth of the urban Saskatchewan respondents contributed to the Saskatchewan Wildlife Federation in the past year. Only 8% of respondents were affiliated with a hunting club. A summary of environment group participation is provided in Table 5.2. Of those surveyed 58% indicated that they were satisfied

**Table 5.1:
 Importance of Motivations for Preservation of Wilderness^a**

Reason	Sample Means^b Response	Std. Dev
Water Quality	4.62	0.75
Air Quality	4.58	0.83
Wildlife Habitat	4.56	0.82
Rare/Endang. Species	4.56	0.78
Future Generations	4.54	0.83
Scenic Beauty	4.43	0.79
Recreational Opportunities	4.35	0.84
Unique Environments	4.34	0.91
Option to Visit in Future	4.34	0.93
Knowing Wilderness Exist	4.29	1.05
Educational and Scientific Study	4.15	0.99
Revenue from Tourism	3.60	1.16
Spiritual Inspiration	3.21	1.31

^a A scale of 1 (not at all important) to 5 (extremely important) is used.

^b Based on a sample of 213 respondents.

with current levels of wilderness and wildlife protection in the province, while the remainder wanted more protection. A similar study in British Columbia (Reid and Stone 1994), indicated that only 37% of B.C. residents were satisfied with current wilderness protection. Another 3% thought too much land was protected and the remaining 60% wanted more protected wilderness. Appendix B provides a sampling of respondents' comments regarding the preservation of wilderness.

Table 5.2:
Members and/or Contributors to Wilderness and Wildlife Groups in the Past Year^a

Group	Mean^b	St. Dev
Saskatchewan Wildlife Federation	21%	0.41
Ducks Unlimited	14%	0.35
Canadian Wildlife Federation	10%	0.30
Hunting Club	8%	0.27
Other Groups	4%	0.20
Green Peace	3%	0.16
World Wildlife Federation	2%	0.15
Member or Contributor of Any Wildlife/Wilderness Group in Past Year	36%	0.48
Member or Contributor of (Wildlife) Wilderness Group in Past 5 Years	44%	0.50

^a Respondents may have been a member or contributor of more than one group.

^b Based on sample of 228 responses.

5.2 Estimation of Relationship between WTP and Respondents' Characteristics

Various respondents were asked to reveal their willingness to pay (WTP) for wilderness preservation using the contingent valuation method. The range of the dependent variable (WTP), was non-negative in this study. Ordinary least squares (OLS) is clearly an inappropriate method of analysis when the dependent variable can be observed to be zero because the linearity assumption is violated (Amemiya 1984). Biased and inconsistent estimates will likely result if OLS is used to

estimate non-negative observations (Judge *et al.* 1988). OLS is more commonly used with observations above zero. Probit and logit analyses are used when the dependent variable is binary, either 0 or 1. This study employed the Tobit analysis to estimate a regression line, as this analysis uses those observations at the limit (0) as well as those above the limit (>0).

The WTP function for preservation under the assumption that respondents are utility maximizers and using the Tobit framework can be expressed by the following relationship (McDonald and Moffit 1980):

$$WTP_i^o = \begin{cases} X_i\beta + e_i & \text{if } wtp_i^a = X_i\beta + e_i > 0 \\ 0 & \text{if } wtp_i^a = X_i\beta + e_i \leq 0 \end{cases} \quad (5.1)$$

where, X_i is a vector of independent explanatory variables, d is a vector of unknown coefficients and e_i is a vector representing the normally distributed disturbance.

The predicted WTP can take on both positive and negative values for a given observation; however, the observed WTP (WTP_i^o) can only take on non-negative values (Kulshreshtha and Gillies 1991). If the WTP estimated (WTP_i^a) is less than or equal to zero the amount actually observed is equal to 0.

The independent explanatory variables for equation (5.1) included various characteristics of respondents. The dependent variable was the WTP estimates for wilderness preservation as reported by the respondents. Table 5.3 presents the results from the Tobit analysis. Estimation of parameters were made using the computer software package SHAZAM (White *et al.* 1990). The WTP of an individual increased as education level increased. The greater the significance of three activities; namely snowmobiling, canoeing and cross-country skiing (the latter two were combined into one variable because of a high positive correlation between them) the higher the WTP to preserve

wilderness areas. Also respondents belonging to a preservation group in the past 5 years showed higher WTP amounts than those who did not. Similarly respondents who expressed satisfaction with current levels of protection had a lower value for preservation. Although income and age did not factor into the analysis there was certainly indication of a positive and negative correlation, respectively, with WTP.

Table 5.3:
Factors Influencing Residents' Willingness-to-Pay for Current Protection

Variable	Normalized Tobit Coefficient	Standard Error	t-value
Constant	-1.933	0.529	-3.66
Education	0.099	0.034	2.94
Environment ^a	0.309	0.176	1.76
Satisfied ^b	-0.359	0.174	-2.06
Can/Xski ^c	0.133	0.073	1.81
Snowmobiling ^d	0.083	0.060	1.39
Likelihood Function = -695.28			
Sample Size = 178			
r ² between observed and expected values = 0.11			

- a Environment is a dummy variable for whether or not the respondent was affiliated with an environmental group in the past 5 years (1=affiliated, 0=no affiliation).
- b Satisfied is a dummy variable for whether or not the respondent indicated to be satisfied with current levels of wilderness protection (1=satisfied, 0=dissatisfied).
- c Can/Xski is a combined variable representing the significance of canoeing and cross-country skiing.
- d Snowmobiling represents the significance of the activity on a scale of 1 (not at all important) to 5 (very important).

5.3 Estimation of Willingness-to-Pay (WTP)

Of the total 193 respondents, 44% were not willing-to-pay anything for current wilderness preservation, 47% were willing-to-pay between \$1-\$100 and the remaining 9% were WTP more than \$100. The distribution of responses is illustrated in Figure 5.1. The highest bid for current

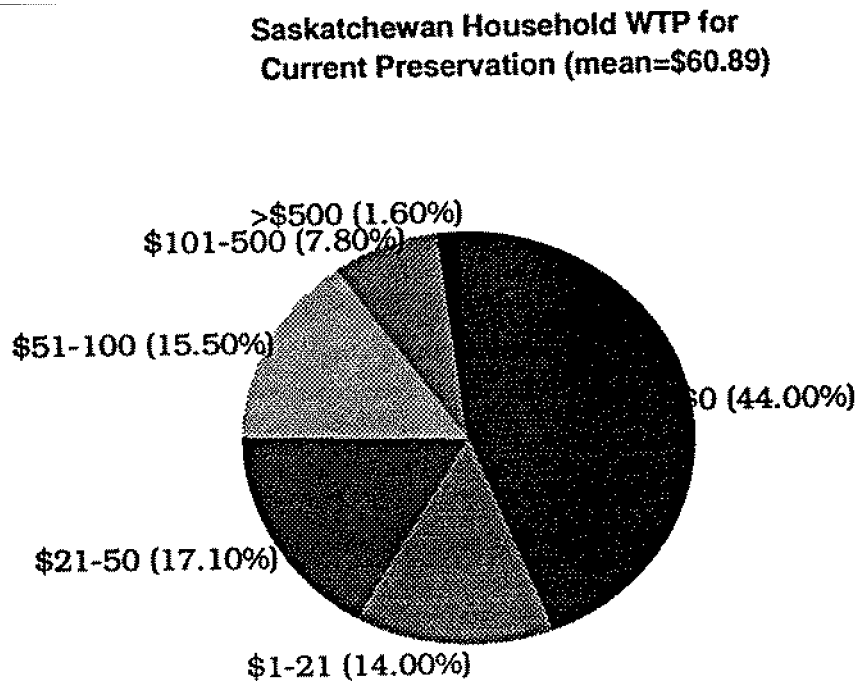


Figure 5.1: Willingness-to-Pay for Current Preservation

preservation was \$1,000 per year. The mean response for the amount a household was WTP annually to ensure current conditions prevail (approximately 5% protection) was \$60.89 over the entire sample or \$111.65 for those who were willing to contribute some dollar amount (108 observations). This value is very similar to that found by other studies. For example, Walsh, Gillman and Loomis (1982) reported wilderness values ranging from \$26-\$85 per Colorado household in 1980. Reid and Stone

(1994) reported a mean value of \$119 per household for the doubling of preserved wilderness in British Columbia. In this same report, 41% of the respondents indicated a \$0 WTP. Similarly zero bids represented 44% of responses in this current study. A non-use estimated value for preserving grizzly bear habitat in Alberta was estimated at about \$45/person/year (Asaf-Adjaye 1989) and nonconsumptive recreation at \$122/year (Fillion *et al.* 1990).¹

Respondents reporting in any of four household income categories, namely \$40,000-49,999, \$50,000-59,999, \$80,000-89,999 and greater than \$89,999 represent 40% of responses and had a WTP level significantly more than those reporting income in any of the other categories. Those in the highest income category (4.6% of responses) had a WTP on average of \$205.56, by far the largest average of any of the categories. Respondents' mean WTP by income groups to ensure current protection prevails is outlined in Table 5.4.

Analysis was also performed by each of the four zones. Respondents from Zone 1 earned on average slightly more than \$48,000 per year, while those from Zone 2, 3 and 4 earned about \$47,000, \$36,000 and \$46,000, respectively. Zones are as defined in Section 3.2 and Table 3.1. On average respondents from Zone 4 were willing-to-pay the most followed by respondents from Zone 1, Zone 2 and lastly Zone 3. It was surprising that the southern Zone 4 resulted in a higher willingness-to-pay than Zones 1 and 2 which represent Prince Albert and the Saskatoon area, respectively. It should be noted that the average for Zone 4 was based on a relatively small sample of 26 responses. A breakdown of willingness-to-pay by income category and zone of origin is provided in Table 5.5.

¹ See Adamowicz (1992) for other estimates of non-market values.

Table 5.4:
Respondents' Mean Willingness-to-Pay (WTP) by Income Groups^a

Income in dollars	No. of Respondents	Percent of Sample	Mean WTP (\$)
<10,000	7	3.6	24.29
10,000-19,999	19	9.8	39.47
20,000-29,999	30	15.5	20.23
30,000-39,999	27	14.0	35.56
40,000-49,999	35	18.1	104.14
50,000-59,999	25	13.0	80.00
60,000-69,999	19	9.8	42.37
70,000-79,999	14	7.3	23.57
80,000-89,999	8	4.1	79.38
>89,999	9	4.7	205.56
Totals	193	100	60.89

^a Mean willingness-to-pay (WTP) is estimated at the 5% protection level.

Table 5.5:
Respondents' Mean Willingness-to-Pay (WTP) by Income and Zone of Residence^a

Income (000's)	Zone 1		Zone 2		Zone 3		Zone 4	
	No. ^b	Mean WTP (\$)	No. ^b	Mean WTP (\$)	No. ^b	Mean WTP (\$)	No. ^b	Mean WTP (\$)
<10	2	5.00	1	0.00	2	55.00	2	25.00
10-19	11	34.09	3	8.33	3	111.67	2	0.00
20-29	8	27.50	9	9.67	9	33.33	4	0.00
30-39	12	32.92	4	60.00	9	13.89	2	100.00
40-49	13	84.62	9	156.67	6	14.17	7	150.00
50-59	11	107.73	7	12.86	5	120.00	2	62.50
60-69	11	29.55	4	105.00	3	20.00	1	0.00
70-79	4	11.25	6	35.00	0	0.00	4	18.75
80-89	6	89.17	2	50.00	0	0.00	0	0.00
>90	6	220.83	1	25.00	0	0.00	2	250.00
Total	84	65.66	46	56.67	37	44.05	26	76.92
	avg. income^c		avg. income		avg. income		avg. income	
	\$48,571		\$47,391		\$36,081		\$45,765	

a Mean willingness to-pay (WTP) is estimated at the 5% protection level.

b no. = number of respondents.

c Overall average income = \$45,518.

Respondents associated with a wilderness or wildlife group in the past 5 years were on average willing-to-pay nearly twice as much (\$80.13) for current levels of preservation as those who were not affiliated with a wildlife or wilderness group (\$40.97). For 7 out of the 10 income

categories, the mean willingness-to-pay by wilderness or wildlife group affiliated respondents was higher than that for those not associated with these groups. Also, group affiliated respondents earned approximately \$8,000 a year more per household. Similar results were apparent when comparing those who were satisfied with current levels of protection versus those dissatisfied. Table 5.6 displays, by income and group affiliation, mean values for ensuring current preservation prevails.

For the case presented in this study, the preservation of wilderness as a percentage of the Province's land base, it is difficult to identify the users, hence, it is likely that the values reported include non-use as well as some use value.

To get an indication of the influences of a respondent's willingness-to-pay, to ensure current protection prevails, a question was posed to determine what portion of the respondent's WTP should be allocated to each of four motives, more specifically, for recreation use, for the option for future use, for use by future generations and for preserving natural environments.

Urban Saskatchewan respondents who were willing to contribute a non-zero dollar amount for preservation purposes were asked to allocate their contribution amount among four options, namely, recreation, bequest, existence and option values. Approximately 69.4% of the contributed amount was allocated to existence and bequest values. Another 15.1% was allocated to keep the option open to visit the preserved lands someday. The remaining 15.5% was for the recreation value of actually visiting the preserved wilderness. These results were similar to those from a recent study by Reid and Stone (1994) on the value of wilderness protection in British Columbia. Table 5.7 provides a summary of the allocation amounts for this study and, for comparative purposes, the B.C. study. British Columbia residents allocated approximately 76.5% of their WTP to the demands of

existence and bequest. Similarly, Walsh *et al.* (1990) found that three-fourths of the WTP for the protection of forest quality in Colorado consisted of preservation values.

**Table 5.6:
 Respondents' Mean WTP by Income and Group Affiliation^a**

Income (\$)	Association with a wilderness group in past five years		No association with a wilderness group	
	no. of Respondents	mean WTP(\$)	no. of Respondents	mean WTP(\$)
<10,000	3	53.33	4	2.50
10,000-19,999	9	77.78	10	5.00
20,000-29,999	7	10.29	22	24.32
30,000-39,999	12	54.17	15	20.67
40,000-49,999	16	84.06	19	121.05
50,000-59,999	13	125.77	11	31.36
60,000-69,999	9	55.00	10	31.00
70,000-79,999	7	10.00	7	37.14
80,000-89,999	5	67.00	2	0.00
>90,000	7	250.00	2	50.00
Total	88	81.96	102	41.37
	average income \$49,773		average income \$41,569	

^a Mean willingness-to-pay (WTP) is estimated at the 5% protection level.

**Table 5.7:
Recreation and Preservation Allocation Percentages**

Value	Percent of Total	
	Saskatchewan	British Columbia
Existence Value	37.5	37.8
Bequest Value	31.9	38.7
Option Value	15.1	13.2
Recreation Value	15.5	10.3

If we assume that existence and bequest values are close to non-use values, and given that these uses constitute roughly 69.4 percent of the total, one can estimate the non-use value of wilderness in Saskatchewan. Assuming an average WTP of \$60.89 per family and a total of 363,000 families in 1991 (as per 1991 census), total value of preservation is estimated at \$22.1 million. Adjusting this by the above proportion of non-use, yields a non-use value of wilderness of \$15.3 million annually.

Chapter 6

SUMMARY AND CONCLUSIONS

Forest lands, besides providing commercial benefits to society, produce some value in their undisturbed state. Such values are typically called non-use values, and constitute a part of the total economic value of forests. This study was carried out with two objectives: one, to document the nature of recreation activity by Saskatchewan residents in general, and at the Prince Albert National Park in particular; and two, to estimate the non-use value of preserving wilderness in Saskatchewan.

According to the sample respondents, the most significant reasons for preserving wilderness were for the purposes of protecting water and air quality, rare and endangered species and wildlife habitat. These were closely followed by the reason of preserving the wilderness areas for future generations. Providing spiritual inspiration and tourism dollars were the least important of the reasons to preserve. On average respondents would allocate almost 70% of their willingness to pay for ensuring current protection prevails to non-use objectives.

Walking, viewing wildlife, fishing, camping, picnicking, swimming and boating were the activities that Saskatchewan residents participated in most frequently. In addition to these same activities, photography, hiking, sunbathing and golfing were participated in by over 49% of the respondents. Walking, viewing wildlife and picnicking in Prince Albert National Park were participated in by over 20% of the respondents. Outside of Saskatchewan the most frequently participated in activities by respondents were walking, photography, wildlife viewing, camping and hiking. The most significant winter activities were cross-country skiing and ice fishing.

To those who wanted to visit Prince Albert National Park more (nearly half the sample), the combination of the wilderness and the town was quite an attractive feature. Interestingly, the liquor

store and bar were relatively unimportant features of the park. The use of a cabin elsewhere, travelling distance expense, park commercialization and congestion were common reasons as to why current users did not want to visit PANP more.

In general Saskatchewan residents are avid participants in outdoor recreation activities, particularly during the non-winter months. Residents value their wilderness whether they use it or not and a key component of this wilderness is Prince Albert National Park.

The mean willingness-to-pay to ensure current conditions prevail was calculated to be \$61 per Saskatchewan household. This translates into an estimated value of \$22.1 million by the residents of Saskatchewan for the approximately 8 million acres designated as wildlife and nature reserves, parks and historical sites. Respondents who contributed or belonged to a wilderness or wildlife group in the past five years had a WTP level approximately double that of those who did not belong to any such organization. The percentage of respondents associated with a wilderness group was 44% in the past 5 years and 36% in the past year. Typically the more income that was earned, the higher was the household's WTP. Interestingly, the mean household income from Zone 4 was \$10,000-12,000 less than that for the other three Zones. The per household WTP was about \$77, \$66, \$57 and \$44 for Zones 3 (Regina, Swift Current, Moose Jaw, Weyburn and Estevan), Zone 1 (Prince Albert), Zone 2 (Saskatoon, Yorkton, Melville) and Zone 4 (North Battleford, Lloydminster, Meadow Lake and Kindersley), respectively. Removing the use related value from the total value of \$22.1 million yields a non-use value of wilderness of \$15.3 million annually. Clearly, non-use values cannot be neglected in multiple use management of forestlands.

REFERENCES

- Adamowicz, W. (1992). Non-Timber Values in Canadian Forests: An Assessment of Uses, Techniques and Data Availability, Rural Economy Project Report 92-02, Department of Rural Economy, University of Alberta, Edmonton.
- Amemiya, T. (1984). "Tobit Models: A Survey", Journal of Econometrics 24:3-61.
- Asufu-Adjaye, J. (1989). "Issues in the Valuation of Nonmarket Natural Resource Commodities: The Case of Wildlife Resources in Alberta." Unpublished Ph.D. Thesis, Department of Rural Economy, University of Alberta, Edmonton.
- Cameron, T. (1988). "A New Paradigm for Valuing Non-market Goods Using Referendum Data: Maximum Likelihood Estimation by Censored Logistic Regression", Journal of Environmental Economics and Management 15: 355-379.
- Cicchetti, C. and Wilde, L. (1992). "Uniqueness, Irreversibility and the Theory of Non-use Values", American Journal of Agriculture Economics 74 (Dec.): 1121-1125.
- Cooper, J. and Loomis, J. (1992). "Sensitivity of Willingness-to-Pay Estimates to Bid Design in Dichotomous Choice Contingent Valuation Models", Land Economics 68 (May): 211-224
- Filion, F., A. Jacquemot, P. Boxall, R. Reid, P. Bouchard, E. DuWors, and P. Gray (1990). The Importance of Wildlife to Canadians Environment Canada, Canadian Wildlife Service, Ottawa.
- Freeman, A (1993). The Measurement of Environmental and Resource Values: Theory and Methods. Resource for the Future, Washington D.C.
- Hanemann, W. (1984). "Welfare Evaluations in Contingent Valuation Experiments with Discrete Responses", American Journal Of Agriculture Economics :332-341.
- Johnson, R., N. Bregenzler, and B. Shelby (1990). "Contingent Valuation Question Formats: Dichotomous Choice versus Open-Ended Responses", Harvard Law Review.
- Judge, G., R. Hill, W. Griffiths, H. Lutkepohl, and T. Lee (1988). Introduction to the Theory and Practice of Econometrics, 2nd ed. New York: Wiley.
- Kahneman, D. and J. Knetsch (1992). "Valuing Public Goods: The Purchase of Moral Satisfaction", Journal of Environmental Economics and Management 22:57-70.
- Kealy, M., J. Dovidio, and M. Rochel (1988). "Accuracy in Valuation is a Matter of Degree", Land Economics 65:158-171.

- Kealy, M. and R. Turner (1993). "A Test of The Equality of Closed-Ended and Open-Ended Contingent Valuations", American Journal of Agricultural Economics 75 (May):321-331.
- Kristrom, B. (1993). "Comparing Continuous and Discrete Contingent Valuation Questions", Environmental and Resource Economics 3 (Feb) 63-71
- Krutilla, J. (1967). "Conservation Reconsidered", American Economic Review 57(Sept.). 777-786.
- Kulshreshtha, S. and J. Gillies, (1991). An Assessment of the Economic Value of the South Saskatchewan River to the City of Saskatoon. Technical Report, University of Saskatchewan, Saskatoon.
- Lawton, L and A. Hickie (1993). Protected Areas in Saskatchewan: A Statistical Report, Technical Report 93-2, Policy and Partnerships Branch, Saskatchewan Environment and Resource Management.
- Loomis, J. (1988). "Contingent Valuation Using Dichotomous Choice Models", Journal of Leisure Research 20 (no. 1): 46-56.
- McCollum, D., A. Gilbert, and G. Peterson (1990). "The Net Economic Value of Day Use Cross Country Skiing in Vermont: A Dichotomous Choice Contingent Valuation Approach", Journal of Leisure Research 22 (4): 341-352.
- McDonald, J. and R. Moffit (1980). "The Uses of Tobit Analysis", The Review of Economics and Statistics 42: 318-321.
- Mitchell, R. and R. Carson (1989). Using Survey to Value Public Goods: The Contingent Valuation Method. Washington D.C.: Resources for the Future.
- Parks Canada (1992/93). Visitor Use Statistics; Research Coordination Branch.
- Parks Canada (1973/74). Use of Canada's National Parks and National Historic Parks and Sites, Statistical Reference, Prairie Region, Socio-Economic Research Division Program, Coordination Branch.
- Reid, R. and M. Stone (1994). Economic Value of Wilderness Protection in British Columbia, British Columbia Ministry of Environment, Lands and Parks and British Columbia Ministry of Forests.
- Saskatchewan Environment and Resource Management and Forestry Canada (1993). State of the Resource Report, Province of Saskatchewan Integrated Forest Resources Management Plan.
- Saskatchewan Parks (1993). Summer Visitation and Outdoor Recreation, Statistical Report.

- Schkade, D. and J. Payne (1994). "How People Respond to Contingent Valuation Questions: A Verbal Protocol Analysis of Willingness to Pay for an Environmental Regulation", Journal of Environmental Economics and Management 26: 88-109.
- SENTAR (1994). The Historical/Cultural Study of the Prince Albert Modle Forest: Report of the 1993-94 Fiscal Year Results. Saskatoon, Saskatchewan.
- Sutherland, R. and R. Walsh (1985). "Effect of Distance on the Preservation Value of Water Quality", Land Economics 61 (no. 3).281-291.
- Tourism and Renewable Resources Saskatchewan (1974). Provincial Recreation Development Areas
- Van Kooten, G.C. (1993). Land Resource Economics and Sustainable Development: Economic Policy and The Common Good. Vancouver. UBC Press.
- Walsh, R., R. Bjonback, R. Aiken, and D. Rosenthal (1990). "Estimating the Public Benefits of Protecting Forest Quality", Journal of Environmental Management 30: 175-189.
- Walsh, R, R Gillman, and J. Loomis (1982). Wilderness Resource Economics: Recreation Use and Preservation Values. Americas Wilderness Alliance, Denver Colorado.
- Weisbrod, B. (1964). "Collective-Consumption Services of Individual Consumption Goods", Quarterly Journal of Economics 78 (Aug.). 471-477.
- White, K., D. Wong, D. Whistler, and S. Haun (1990). SHAZAM User's Reference Manual Version 6.2, Toronto: McGraw-Hill.

APPENDIX A
STUDY QUESTIONNAIRE

SASKATCHEWAN RECREATION AND WILDERNESS SURVEY

Summer 1994

This survey is being conducted by the University of Saskatchewan Agricultural Economics Department for the Prince Albert Model Forest recently designated by Forestry Canada. The model forest aims at determining both timber and non-timber values associated with forests and wilderness.

The purpose of this survey is to determine:

- your more popular recreational activities,
- where your recreation time is spent,
- your use of the Prince Albert National Park, and
- how Saskatchewan residents value their protected wilderness areas

Your participation in this survey is important whether you recreate or not. Questions about your background are asked in order to allow the researchers to determine the representativeness of the random sample of Saskatchewan residents. **ANSWERS PROVIDED WILL BE KEPT IN STRICT CONFIDENCE.** If there are any problems or concerns please feel free to contact the Department of Agricultural Economics at:

1-800-728-PAMF
1-800-728-7263
Department of Agricultural Economics
University of Saskatchewan
S7N 9Z9

Thank you for taking a few minutes to answer these questions regarding recreation and wilderness in Saskatchewan. Your completion of the survey will be much appreciated.

Yours sincerely,

Surendra N. Kulshreshtha, Ph.D.
Professor

Kurt G. Loewen
Research Associate

**Main Survey: SASKATCHEWAN
 RECREATION AND WILDERNESS SURVEY
 PRINCE ALBERT MODEL FOREST STUDY**

1. In the space provided beside each activity below, please indicate the importance of each activity to you, on a scale of 1 to 5, where:

- 5 = very important 2 = not very important
 4 = important 1 = not at all important
 3 = somewhat important

1	2	3	4	5	Camping	1	2	3	4	5	Fishing
1	2	3	4	5	Hiking	1	2	3	4	5	Waterskiing/Tubing
1	2	3	4	5	Picnicking	1	2	3	4	5	Boating
1	2	3	4	5	Walking	1	2	3	4	5	Canoeing/Kayaking
1	2	3	4	5	Photography	1	2	3	4	5	Sailing/Windsurfing
1	2	3	4	5	Wildlife Viewing	1	2	3	4	5	Swimming
1	2	3	4	5	Mountain Biking	1	2	3	4	5	Ice Fishing
1	2	3	4	5	Hunting	1	2	3	4	5	Snowshoeing
1	2	3	4	5	Horseback Riding	1	2	3	4	5	Cross Country Skiing
1	2	3	4	5	Golfing	1	2	3	4	5	Downhill Skiing
1	2	3	4	5	Tennis	1	2	3	4	5	Snowmobiling
1	2	3	4	5	Sunbathing	1	2	3	4	5	Other (Specify)_____

2. In the past 12 months, did you participate in any of the following activities

- A. in Prince Albert National Park, C. in Canada but out of Saskatchewan and
 B. elsewhere in Saskatchewan., D. outside Canada.

(please mark an X for all applicable boxes, you can have more than one X per activity)

A	B	C	D	ACTIVITY	A	B	C	D	ACTIVITY
				Camping					Fishing
				Hiking					Waterskiing/Tubing
				Picnicking					Boating
				Walking					Canoeing/Kayaking
				Photography					Sailing/Windsurfing
				Wildlife Viewing					Swimming
				Mountain Biking					Ice Fishing
				Hunting					Snowshoeing
				Horseback Riding					Cross Country Skiing
				Golfing					Downhill Skiing
				Tennis					Snowmobiling
				Sunbathing					Other (Specify)_____

3. If you didn't participate in any of these activities in the past 12 months, why not?

<input type="checkbox"/>	too expensive	<input type="checkbox"/>	not able
<input type="checkbox"/>	not an outdoors person	<input type="checkbox"/>	bugs
<input type="checkbox"/>	too busy/no time	<input type="checkbox"/>	Other (please comment) _____
<input type="checkbox"/>	previously had bad experiences		_____

4. About how many trips have you made to the Prince Albert National Park in the **past 5 years**? _____ trips.

5. Record your responses in the table below for questions **5.A.** and **5.B.**

A. How many trips have you taken in the **past 12 months** that included activities listed in Question 2? (please combine both day and mullti-day trips in your totals)

B. What was the average length in days of a non-winter trip and a winter trip?

		5.A. NUMBER OF TRIPS	5.B. AVERAGE LENGTH
In Prince Albert National Park	non-winter (April-Oct.)		
	winter (Nov-March)		
In Saskatchewan outside the Prince Albert National Park	non-winter (April-Oct.)		
	winter (Nov-March)		
Out of Province but in Canada	non-winter (April-Oct.)		
	winter (Nov-March)		
Outside Canada	non-winter (April-Oct.)		
	winter (Nov-March)		

6. Please estimate the number of days spent in the **past 12 months**, in each of the following areas:

<input type="checkbox"/>	Prince Albert National Park	<input type="checkbox"/>	Big River Area
<input type="checkbox"/>	McPhee Lake	<input type="checkbox"/>	Meadow Lake
<input type="checkbox"/>	Emma / Christopher Lake	<input type="checkbox"/>	Cypress Hills
<input type="checkbox"/>	Narrow Hills (Nipawin)	<input type="checkbox"/>	Moose Mountain
<input type="checkbox"/>	Candle Lake	<input type="checkbox"/>	Duck Mountain
<input type="checkbox"/>	Anglin Lake	<input type="checkbox"/>	Greenwater Lake
<input type="checkbox"/>	Lac La Ronge	<input type="checkbox"/>	Other (Specify) _____

If you have visited Prince Albert National Park in the past year, please also complete the accompanying survey. Thank you.

7. Would you like to spend more time at the Prince Albert National Park? _____ YES _____ NO

(If YES go to Question 8 and if NO go to Question 9)

8. In the space provided beside each feature of Prince Albert National Park: below, please indicate the importance of each feature to you, on a scale of 1 to 5, where:

- 5 = very important 2 = not very important
 4 = important 1 = not at all important
 3 = somewhat important

1	2	3	4	5	Scenery	1	2	3	4	5	Accommodation
1	2	3	4	5	Forest	1	2	3	4	5	Paddlewheeler
1	2	3	4	5	Lakes	1	2	3	4	5	Boat Dock
1	2	3	4	5	Beaches	1	2	3	4	5	Boat Launch
1	2	3	4	5	Grey Owl's Cabin	1	2	3	4	5	Rental Services
1	2	3	4	5	Hiking Trails	1	2	3	4	5	Waskesiu townsite
1	2	3	4	5	Birds (Loons, Pelicans, etc.)	1	2	3	4	5	Areas outside Waskesiu townsite
1	2	3	4	5	Bison/Buffalo	1	2	3	4	5	Golf Course
1	2	3	4	5	Moose	1	2	3	4	5	Tennis Courts
1	2	3	4	5	Bear	1	2	3	4	5	Riding Stables
1	2	3	4	5	Other Wildlife	1	2	3	4	5	Restaurants
1	2	3	4	5	Fish	1	2	3	4	5	Bar/Liquor Store
1	2	3	4	5	Picnic Facilities	1	2	3	4	5	Grocery Store
1	2	3	4	5	Camping Facilities	1	2	3	4	5	Other (specify) _____
1	2	3	4	5	Trailer Park	1	2	3	4	5	Other (specify) _____

9. Why don't you want to spend more time in Prince Albert National Park?

- | | | | |
|--------------------------|--------------------------------------|--------------------------|--|
| <input type="checkbox"/> | too far | <input type="checkbox"/> | didn't know about the park |
| <input type="checkbox"/> | own or use a cottage/cabin elsewhere | <input type="checkbox"/> | too developed/commercialized |
| <input type="checkbox"/> | too expensive | <input type="checkbox"/> | already spend enough time there |
| <input type="checkbox"/> | not enough time | <input type="checkbox"/> | snowmobiling prohibited |
| <input type="checkbox"/> | too congested | <input type="checkbox"/> | hunting prohibited |
| <input type="checkbox"/> | poor facilities | <input type="checkbox"/> | other parks/places are better why? _____ |

Other reasons (please comment):

SIGNIFICANCE OF WILDERNESS

10. A. In the past year were you a member of any of the following groups? (please mark appropriate boxes)

10. B. In the past year did you contribute to any of the following groups? (i.e. donations above membership fees)

10.A	10.B	ORGANIZATION
YES	YES	Hunting/Trapping Club(s)
YES	YES	Ducks Unlimited
YES	YES	Saskatchewan Wildlife Federation
YES	YES	Canadian Wildlife Federation
YES	YES	World Wildlife Fund
YES	YES	Greenpeace
YES	YES	Other (specify) _____

11. If you didn't belong or contribute to any of the above groups in the past year, have you in the past 5 years? ____ **YES** ____ **NO**.

12. There are many reasons for valuing existing and potential wilderness areas. For each. of the possible reasons below, please indicate the importance to you on a scale from 1 to 5 where:

- 5 = very important
- 4 = important
- 3 = somewhat important
- 2 = not very important
- 1 = not at all important

1	2	3	4	5	a) Protecting Rare and endangered species
1	2	3	4	5	b) Protecting wildlfie habititat
1	2	3	4	5	c) Conserving natural areas for educational and scientific study
1	2	3	4	5	d) Providing scenic beauty
1	2	3	4	5	e) Protecting water quality
1	2	3	4	5	f) Protecting air quality
1	2	3	4	5	g) Protecting income from tourist industry
1	2	3	4	5	h) Preserving unique plant and animal environments
1	2	3	4	5	i) Providing spiritual inspiration
1	2	3	4	5	j) Providing recreational opportunities (hiking, camping, fishing, hunting, wildlife viewing, etc.)
1	2	3	4	5	k) Knowing that in the future you have the option to go there if you choose
1	2	3	4	5	l) Knowing wilderness areas exist
1	2	3	4	5	m) Knowing that future generations will have wilderness areas

13. Currently some 5% (8,055,000 acres) of the Province is protected as wildlife and nature reserves, parks and historical sites. Are you satisfied with the current levels of protection? ____ **YES** ____ **NO**.

If NO, should ____ **MORE** or ____ **LESS** wilderness be protected?

Please keep in mind the next several questions are a hypothetical experiment intended to provide an economic measure of how strongly you value the protection of wilderness areas in Saskatchewan.

14. Assume that the only way to protect wilderness areas is for Saskatchewan households to support a special fund to be used exclusively for the purpose of protecting and managing wildlife and nature reserves, parks and historical sites in Saskatchewan. Please answer all three parts.

- (1) What is the maximum amount you would pay annually to ensure that current levels of protection (5% or 8,055,000 acres of Saskatchewan) prevail? \$ _____
- (2) What is the maximum amount you would pay annually to increase wilderness areas from 5% (8,055,000 acres) to 7.5% (12,083,000 acres) of Saskatchewan? \$ _____
- (3) What is the maximum amount you would pay annually to increase wilderness areas from 5% (8,055,000 acres) to 10% (16,111,000 acres) of Saskatchewan? \$ _____

Reasons:

15. If you answered zero to any of the above, was your answer zero because (only mark one):

- _____ a. you do not receive any benefits from the recreation opportunity or resource and therefore see no reason to pay?
- _____ b. you cannot afford it or your cost of living is already too high?
- _____ c. you feel that there is enough protection already?
- _____ d. other (please specify) _____

16. In Question 14, what is the highest dollar value you reported? \$ _____ (If zero, skip Question 17)

17. People value the protection of wilderness areas for several reasons. What proportion (percent of 100) of the highest dollar value you reported would you assign to each of the following? Read through the questions once and then, assign each a percentage. Together the four responses should total 100%.

- (1) Portion/percent to **actually visit** existing or potential wilderness areas each year? _____ %
 - (2) Portion/percent to ensure **your** use in the future? _____ %
 - (3) Portion/percent to ensure that **future generations** will have wilderness areas? _____ %
 - (4) Portion/percent to ensure that a **natural habitat** for plants, fish, wildlife etc. exists? _____ %
- 100%

Reasons:

BACKGROUND:

**These questions are asked to ensure the randomness of the sample of Saskatchewan residents.
Answers provided will be kept in STRICT CONFIDENCE.**

18. What is your age? _____ years
19. What is your sex? _____ Male _____ Female
20. Near what city or town do you presently reside? _____
21. Including yourself, how many individuals are there in your household? _____
22. How many children under the age of 16 are there in your household? _____
23. How many years of school did you complete? (mark only one)
- | | | | | | | | | | | | | | | | | | | | | |
|--------------|---|---|---|---|---|---|---|-------------|----|----|----|---------------------------------|----|----|----|----|----|----|-----|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20+ | |
| Grade school | | | | | | | | High School | | | | Trade School/College/University | | | | | | | | |
24. Approximate before tax income of your household in 1993? (please check one category)

<input type="checkbox"/>	less than \$10,000	<input type="checkbox"/>	\$50,000-\$59,999
<input type="checkbox"/>	\$10,000-\$19,999	<input type="checkbox"/>	\$60,000-\$69,999
<input type="checkbox"/>	\$20,000-\$29,999	<input type="checkbox"/>	\$70,000-\$79,999
<input type="checkbox"/>	\$30,000-\$39,999	<input type="checkbox"/>	\$80,000-\$89,999
<input type="checkbox"/>	\$40,000-\$49,999	<input type="checkbox"/>	more than \$90,000

25. Occupation: _____
26. If you have visited Prince Albert National Park in the **past 12 months**, could you please provide us with your phone number so that we can learn more about your park experience. Thank you.
Phone # _____ - _____

If you would like to make a comment on the Prince Albert National Park, or on the state of wilderness in Saskatchewan, please use the following space.

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY

APPENDIX B
SURVEY COMMENTS

SURVEY COMMENTS/SUGGESTIONS

Comments about limited WTP for Wilderness Preservation

The four most frequent reasons for not WTP to preserve wilderness were: (1) income constraints; (2) users should finance; (3) more of the taxes already paid should be allocated to preservation; and (4) we already pay enough in user fees.

Sample of Comments:

I pay for hunting permits and fishing permits and feel that is more than enough.

Hunting/fishing fees should be channelled to land purchases.

I pay enough in hunting and fishing licenses, gas, camping fees, boat gas, shells and fishing lures.

This should come out of general Provincial revenues.
As a hunter one already pays habitat fees and license fees.

Support to wilderness areas should be supported by Provincial Governments and users of such areas. If someone is a non-user they would likely still want to see a portion of their taxes go towards protecting such areas. Through taxation all residents feel they have contributed.

This money should come from the environment tax we already pay. The environmental tax should look after most of the cost. Fishing and hunting fees should take care of the rest.

We are already over taxed - there should be a fund generated by tourist dollars to increase the percentage of protection. Where do the fees for hunting and fishing go?

Try making big corporations pay that pollute our water and air. They are the main problem for our generation. This money should stabilize fish and animals and increase population. These should not be attractions.

Already pay enough tax base to province that should be more than adequate to support the above (income tax, surtax, sales tax, GST, etc).

I'm over taxed now. Redeployment of money currently wasted on Casinos, Oil companies, insurance companies, etc. would suffice for wilderness protection.

The government spends enough money on natural resources and wilderness protection should be totally funded by the users.

At this time of economic struggle people don't have the dollars to pay more. We usually camp more but we are finding any increase too much and camp less.

Companies such as paper mills and saw mills should pay for their destruction of wilderness.

Comments For and Against the Preservation of Wilderness

The majority of respondents support wilderness protection in principle if not financially. Generally, there was a consensus on the significance of and need for wilderness protection.

Sample of Comments:

I am a hunter and would like to continue to see wildlife terrain protected and established outside of park boundaries so I may use this land to hunt on.

I would like to see less development on our northern lakes. I also would like to see the Americans come second to Canadians when it comes to hunting and fishing. I think it's not right that they have the right to harvest our lakes and wildlife and destroy our wilderness:

In my view if we ensure natural habitat continues to exist then future generations will have wilderness areas to enjoy. However, if the establishment of these areas means more commercialization, over restriction, high costs, ie. yuppie ville wilderness area then I would not be willing to finance any part of this. Wilderness areas should be restricted to tenting and truck campers only - no motorhomes or trailers other than tent type and boats!!!

Water quality and wilderness areas should be protected at any cost. The balance in nature is worth more to me than my life is.

Natural wilderness areas are a renewable resource which is becoming scarcer in this world and will become sought after by many people from other provinces and countries. They are a source of health and a barometer of how well our living areas are doing. We need to maintain and keep wilderness areas to ensure that our province has a lean and healthy environment for our present and future generations

We should deal with native land claims on an urgent basis, and then begin immediate negotiations with leaders of aboriginal groups regarding future management and use of wilderness areas We should never make experiencing the wilderness a privilege of only the wealthy.

I feel the provincial government in co-operation with the federal government should set aside approximately 10% of Saskatchewan for parks and wilderness, before they are subject to resource exploitation. These new areas need not be improved until demand and financial resources warrant, and some areas should not be improved at all and left in their natural state with limited or no access.

I think that this province has a lot of beauty in its flora and fauna and it is important to strike a balance in its use so it gets enjoyed without losing it.

Unable to put a monetary value on something so precious.

Maintenance of existing habitat and positive planning for the future should be primary goals. Visiting and use should take a lesser priority.

Someone in Ottawa dreaming of dollars from every park. If prices go up more we will find somewhere else. \$10/day is too much. If they think they can get money out of tourists they'll only be chasing them away. Canadians should be their first concern.

If native people had stricter regulations, ie: hunting fees I would, feel more comfortable about contributing to wildlife preservation.

Philosophically opposed to (socialist) collective ventures that negate man qua man & give preference to the environmentalist mentality that preserves nature at the expense of human individual nature.

Canada is one of the most beautiful countries. We have the natural environment and should all help to preserve this. The quality of life is much better in natural environments.

There is only one word to describe the parts where forestry takes place. UGLY. Looks good from the road but beyond the road I don't like it.

For the number of countless forests we've destroyed and not replaced as well as entire ecosystems we've ruined we need to protect what we have. Once gone they perhaps may never return. Look at Africa many centuries past, they had a forest as rich as ours, now these regions are lifeless.

It is the governments responsibility to protect our natural resources They should not be pressured by big business with promises to create jobs at the expense of the environment.