

The Non-consumptive Values of  
Wildlife in the Riding Mountain Area

By: David Beeusaert

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of the Requirements for the Degree,  
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**THE NON-CONSUMPTIVE VALUES OF WILDLIFE  
IN THE RIDING MOUNTAIN AREA**

By

*Mr. David Beeusaert*

*A practicum submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfilment of the requirements of the degree of Master of Natural Resources Management.*

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## ABSTRACT

The primary purpose of this study is to determine the dollar value of non-consumptive recreation specifically related to the large mammal species of the Riding Mountain Biosphere Reserve (RMBR), which includes Riding Mountain National Park (RMNP) as its core area. The specific objectives are: to determine the level of non-consumptive expenditures by RMNP visitors; to determine the level of non-consumptive expenditures by permanent residents of the RMBR; to determine the level of non-consumptive expenditures by non-resident landowners of the RMBR; to determine the level of consumer surplus that exists in the RMBR for non-consumptive large mammal recreational use; and to offer recommendations concerning RMNP and RMBR management strategies.

A survey was conducted with Park visitors and landowners in the RMBR. Park visitors included campground visitors, people who own cabins and cottages in the Park, and seasonal residents who own cabins just outside of the Park. Two classes of landowners were considered: residents in the RMBR and non-resident landowners in the RMBR. As well, First Nations residents of the RMBR (specifically the Keeseekoowenin First Nation) were also included in the study.

An orally administered survey was used with Park visitors and cabin owners in and around the Park. During the summer of 1993, 191 of these interviews were conducted. A mail-out survey was used to solicit information from permanent and non-permanent resident landowners in the RMBR. 453 of these surveys were sent out and 203 were returned. In total, 394 completed surveys on non-consumptive uses and values of the large mammal species of the RMBR were collected.

Presently there is a great deal of non-consumptive use of the large mammal species of the RMBR by Park visitors and residents of the area. Interest in watching these animals is expressed by over 90% of both survey populations, and interest in photographing is expressed by 77% of Park visitors and 65% of area residents. These results indicate large mammals have a high social value for the Park visitors and area residents. Associated with the non-consumptive use of wildlife are various expenditures and benefits, not all of which are covered in conventional economic markets. Park visitors spend on average \$365/trip to watch and photograph the animals while area residents spend on average \$838/year to partake in the same activities. Non-market valuation techniques have been developed to measure the unpaid benefits. There is a high level of consumer surplus that exists for the non-consumptive use of these large mammals. This amounts to \$122 on average for Park visitors and \$235 on average for area residents.

The results of this project indicate that large mammals are an important resource in the RMBR and societal benefits are being derived from these animals. There are considerable non-consumptive expenditures by both area residents and Park visitors to enjoy these animals, as well as large levels of willingness-to-pay to further enjoy these animals. Implications of consumer surplus and recommendations are proposed to assist in Park management and the provision of user facilities.

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Introduction

Canada enjoys a great wildlife heritage. For centuries people have depended on wildlife for necessities such as food, furs and medicine. However, with the modernization of society and the advent of domesticated animals for food sources, society has become less dependent on wildlife to meet our basic needs. This has led to the emergence of wildlife as a recreational resource for Canadians. Wildlife is used as a recreational resource by consumptive users (ie. sport hunters) and by non-consumptive users such as nature viewers and photographers.

There has been a distinct shift in the usage of wildlife in Canada over the past couple of decades. The current trend in wildlife management in Manitoba and across Canada is toward non-consumptive activities such as viewing and photography (Manitoba Environment 1993). These non-consumptive activities account for a significant proportion of the total time and money expenditures on wildlife-related activities in Canada.

#### 1.2 Background

Riding Mountain National Park (RMNP) is the only national park in Manitoba and is located in south-western Manitoba approximately 300 kilometers north-west of Winnipeg (Figure 1-1). The Park is comprised of 2976 square kilometers of land and water mass and serves as a recreational resource for people from around the world, although Manitoba residents account for 85% of total visitation (Parks Canada 1987). RMNP is unique in that it is

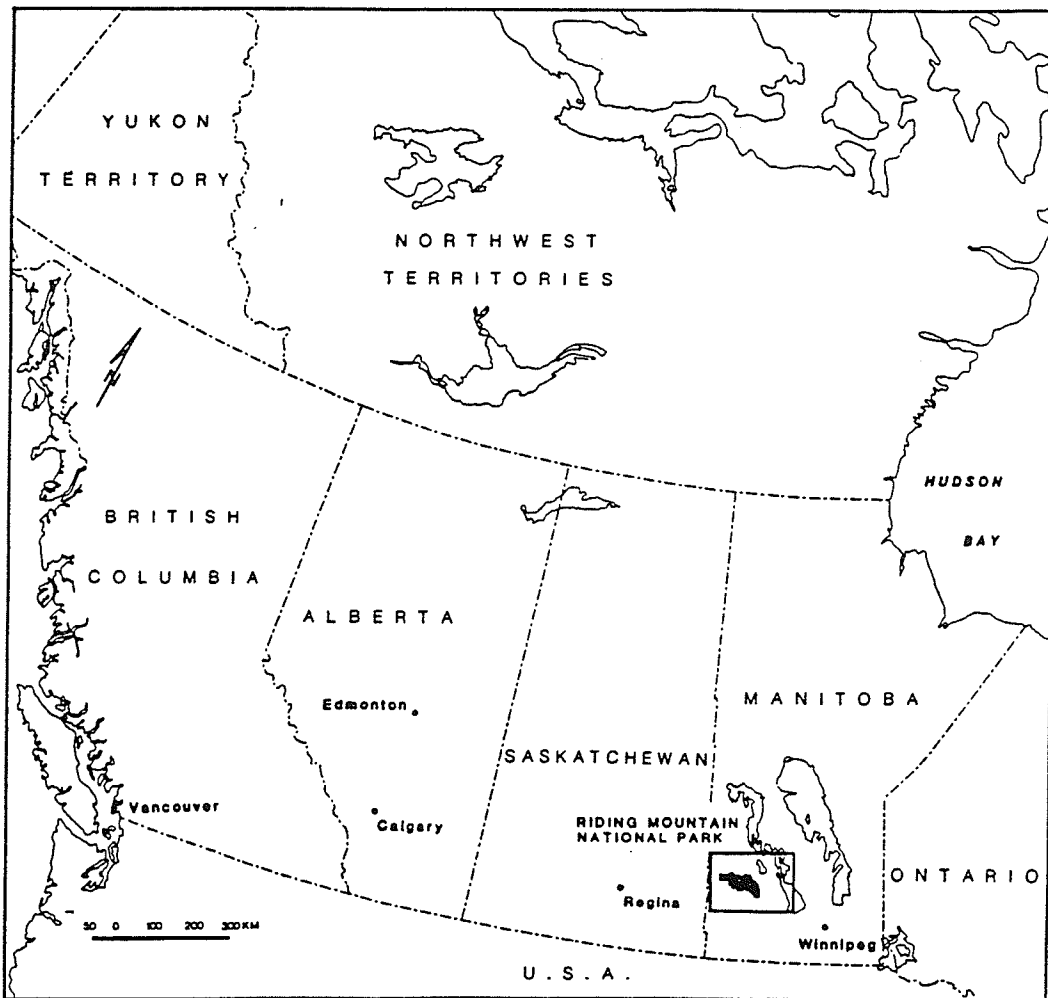


Figure 1-1. Regional setting of Riding Mountain National Park.

Source : Environment Canada, Parks, (1985).

literally an island of preservation surrounded by a human-altered environment.

RMNP is a crossroads where habitats characteristic of eastern, western, and northern Canada meet in a unique assemblage of forest, grassland, hills and valleys (Parks Canada 1987). Due to this diversity of habitats the Park is home to a myriad of wildlife species, including large mammal populations of black-bear (*Ursus americanus*), elk (*Cervus elaphus*), moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*) as well as a captive herd of bison (*Bison bison*).

The RMNP area was designated as a Biosphere Reserve in 1986 under the United Nations Man and the Biosphere (MAB) Program. The Riding Mountain Biosphere Reserve (RMBR) consists of RMNP as the core area and 18 surrounding municipalities as the zone of co-operation. The landscape varies from flat to gently undulating Manitoba lowlands. Grain and cattle farms are predominant in this zone (Roots 1988).

### 1.3 Problem

Very few studies have been conducted in Canada on the non-consumptive values of wildlife; consequently there is very little data available on this subject. There is a Canada-wide survey conducted approximately every five years concerning the non-consumptive uses and values of wildlife in Canada. These surveys are conducted by the Canadian Wildlife Service and Statistics Canada in cooperation with the Provincial governments and are referred to as The National Survey on the Importance of Wildlife to Canadians (Filion et. al. 1983, 1989, and 1993) The information contained therein gives a



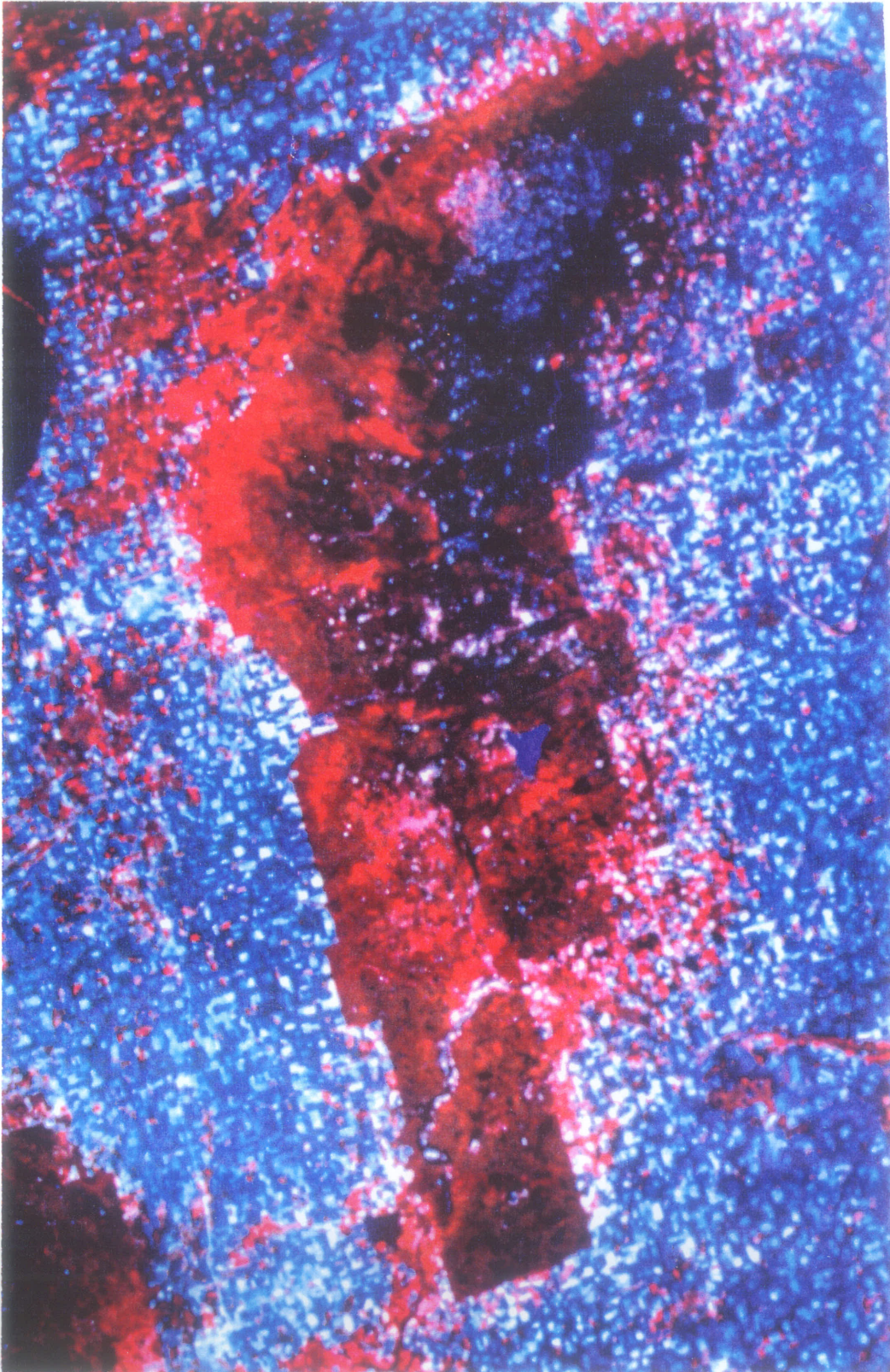


Figure 1-2. Remote sensing image of Riding Mountain National Park.

general overview as to the level of non-consumptive uses and values of wildlife for all of Canada as well as on a provincial basis.

However, as good as this provincial information may be for developing wildlife plans for the province of Manitoba as a whole, these surveys fail to break down the information into regional analyses within the provinces. No area-specific data exist for the Riding Mountain National Park area, which is a geographically and legally unique area in Manitoba. It is possible that without a regionally based study of the non-consumptive values of wildlife in the RMNP area, resource management is being compromised because of a lack of complete information.

Presently there are conflicting forms of resource management being practiced in the RMNP area as the Park itself is managed by the federal government through Parks Canada and the area surrounding the Park is managed by the provincial government of Manitoba. Parks Canada and the Manitoba Department of Natural Resources both share management responsibility for the single populations of animals in the area, yet each agency has vastly different objectives for these animals. The Park mandate calls for natural evolution of ecosystems with as much human influence removed from the landscape as is possible. Parks Canada pursues a goal of non-intervention management, providing protection from outside influences, and allowing the "natural environment" to control populations (Paquet 1991). The provincial mandate seeks to ensure that management is carried out on a sustained yield and multiple use basis, while simultaneously mitigating agricultural depredation (Paquet 1991). This agency allows for a multiplicity of uses, including both consumptive and non-consumptive uses. These two

resource management objectives hold true for not only the animals but also for the other resources of the area.

Wildlife management approaches differ for consumptive and non-consumptive uses. The approach for consumptive uses entails managing the resource so that there is a harvestable surplus. The approach for non-consumptive uses involves protecting the resource from human intervention and letting the resource manage itself. This approach may also entail keeping the population steady so there is no harvestable surplus, creating or maintaining proper habitat for the resource, or revitalizing old habitat not being used by the resource.

#### 1.4 Objectives

The primary purpose of the study is to determine the dollar value of non-consumptive recreation specifically related to the large mammal species of the Riding Mountain Biosphere Reserve.

The specific objectives are:

1. To determine the level of non-consumptive expenditures by RMNP visitors.
2. To determine the level of non-consumptive expenditures by permanent residents of the RMBR.
3. To determine the level of non-consumptive expenditures by non-resident landowners of the RMBR.
4. To determine the level of consumer surplus that exists in the RMBR for non-consumptive large mammal recreational use.
5. To offer recommendations concerning RMNP and RMBR management strategies.

### 1.5 Justification

This study was undertaken with the aim to provide basic, accurate, and reliable socioeconomic information on the importance of the large mammal resources to the RMBR. This information could be used for policy and program management needs at the provincial and federal level. A study of this kind had never been done in the RMBR. The results are potentially useful for park planning, management, and conflict resolution in the area. A study of this nature can bring the non-consumptive uses and values of wildlife to the forefront. The results can be compared against the values that have been documented for consumptive use. This type of comparison can prove useful for wildlife management programs and resource management in general. Since the future of wildlife use in Canada is progressing along the path towards the non-consumptive rather than the consumptive uses, this study provides the RMNP area with the chance to be a leader in the future direction of wildlife management.

The Park is known as a good place to see wildlife and is well regarded for its populations of large mammals; therefore the study focused on these species. The study takes neither a pro-hunting nor an anti-hunting stance, and recognizes that many hunters are also active non-consumptive users of wildlife. Various uses of the wildlife are all valid and are considered acceptable within their own rules. The study focuses on the non-consumptive uses and values of wildlife, as this is a neglected area.

### 1.6 Methods

A survey was conducted via the use of questionnaires to solicit information from Park visitors and from landowners in the RMBR. To facilitate

the process of conducting the questionnaires, the researcher broke down the Park visitors and area landowners into six sub-groups:

- RMNP campground visitors
- people who own cabins and cottages in the Park
- seasonal residents who own cabins just outside of the Park
- permanent resident landowners in the RMBR
- absentee landowners in the RMBR
- First Nations residents of the RMBR (specifically the Keeseekoowenin First Nation)

An orally administered survey was used when conducting interviews with Park visitors and cabin owners in and around the Park. During the summer of 1993, 191 of these interviews were conducted. A mail-out survey was used to solicit information from permanent and non-permanent resident landowners in the RMBR. 453 of these surveys were sent out and 203 were returned. In total, 394 completed surveys on non-consumptive uses and values of the large mammal species of the RMBR were collected.

CHAPTER TWO  
REVIEW OF RELATED LITERATURE

2.1 Riding Mountain National Park

The land in and around RMNP was utilized in prehistoric times by various hunting and gathering nomadic peoples (Parks Canada 1984). By 1690, the area was inhabited by Cree, Assiniboine, and Saulteaux-Ojibwa people. The Saulteaux-Ojibwa people became predominant in the area by the 1820's (Parks Canada 1987). After the transfer of Rupert's Land to Canada in 1870, the RMNP area came under federal jurisdiction. The Government of Canada saw great potential in the area for uses such as timber, hay meadows for livestock grazing, the animals as sources of meat for the settlers and the water was usable for fishing, watering livestock and domestic purposes (Tabulenas 1983). The Riding Mountain area was initially surveyed and opened for settlement in the 1870's (Parks Canada 1984). During the following fifty years, European settlers established farms and businesses in the area.

The area was designated as the Riding Mountain Forest Reserve in 1895 to protect and manage the stands of timber for the local agricultural community (Parks Canada 1984). However, overharvesting by commercial lumber operations occurred and the harvest had to be regulated. The indiscriminate logging that had begun in the 1870's had to be regulated as early as 1909 (Tabulenas 1983). In this 39 year period, loggers had harvested over 75% of the standing trees. Timber harvesting was strictly regulated and monitored from 1909 until the area became a national park in 1930. The level of harvest was so awesome that in the 1910's the Forestry Branch had to undertake reforestation projects (Tabulenas 1983).

However, with all the trees being cut down the area was more conducive to grass growing and wild hay emerged. Local farmers were allowed to graze their cattle on these areas up until the 1960's (30 years after National Park designation).

From the 1920's on, tourism and recreation became the focus of RMNP (Parks Canada 1984). Other activities happening in the Park included public works projects, small scale cord-wood operations, a German POW camp during World War II, and an experimental forestry station from the 1940's to the 1960's under the authority of the Canadian Forestry Service (Parks Canada 1984).

Historically, RMNP had strong ties with the local communities (Tabulenas 1983). Initially the Park was managed on a multi-use basis that included consumptive activities, which represented a significant portion of the economic activity of the area (Fay 1982). As time progressed so did National Park Policies. The reappraisal and reformulation of Park policies during the 1950's culminated in the National Park's Policy of 1964. This new policy emphasized the protection of resources in RMNP instead of the use of these resources. Consequently, consumptive activities such as hunting, haying and grazing were discontinued in RMNP. The last timber lease that allowed logging in the Park expired in 1972 (Schroeder 1981).

The Riding Mountain area was established as a national park in 1930.

The purpose of RMNP is:

"To protect for all time an area of Canadian significance that represents the southern Boreal Plains and Plateaux natural region plus a portion of the Manitoba Lowlands natural region." (Parks Canada 1987).

Today RMNP has the mandate of managing the protected area on an ecosystem basis, maintaining the area in a natural state and trying to meet

compatible social and economic needs (Parks Canada 1994). RMNP must also act to provide educational and recreational opportunities for its users, and to encourage public understanding, appreciation, and enjoyment of the natural heritage so as to leave it unimpaired for future generations (Parks Canada 1994).

## 2.2 The Man And The Biosphere Program (MAB)

The United Nations Educational, Scientific and Cultural Organization (UNESCO) established the MAB Program in 1971 to address peoples' relationship to the environment through the establishment of Biosphere Reserves (Canada/MAB 1987). The concept in practice is meant to relate ecosystem conservation directly to issues of sustainable resource use (Francis 1985). Biosphere Reserves form a global network of established conservation areas. A Biosphere Reserve is comprised of a core area of protected environment, sometimes an already established National Park, adjacent to a zone of co-operation, which displays how once similar lands have been altered and are now presently managed to satisfy human needs.

One of the main objectives of the MAB Program is to develop a global network of Biosphere Reserves, each selected on the basis of an international classification of biogeographic provinces. The network will eventually include representation of all the world's ecological systems and the associated patterns of human land use (Parks Canada 1987). The monitoring of changes caused by the human uses of natural ecosystems provided by a global network of Biosphere Reserves provides much potential for applied research.

Although RMNP may physically be an island of isolation, it can not and does not act alone. Riding Mountain has an impact on the region and the



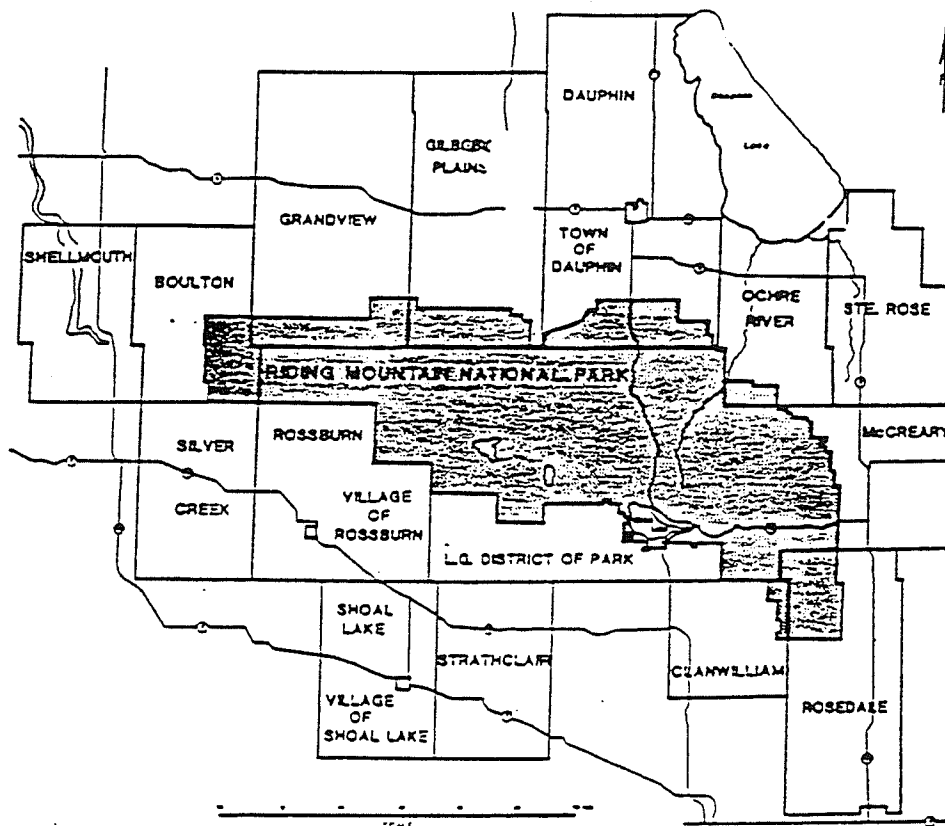
region has an influence on the Park (Parks Canada 1987). The socioeconomic benefits derived from the Park in relation to the adjacent area, in terms of employment and the demand for goods and services, are generally positive (Krawchuk 1990). Recognizing that not all land use management decisions can be beneficial to all parties concerned, Parks Canada is aware that the potential exists for there to be detrimental effects on surrounding lands as a result of decisions made within the Park. Parks Canada is aware of the potential impact of its actions through its regional integration policy to ensure Park management is responsive to local concerns (Krawchuk 1990).



### 2.3 The Riding Mountain Biosphere Reserve

The Riding Mountain Biosphere Reserve consists of RMNP and 18 surrounding municipalities (Figure 2-1). It was designated in 1986 as an area representative of Canadian Taiga and Grasslands ecosystems (Canada/MAB 1987). The designation of the RMBR had many effects on the Riding Mountain area. It theoretically has: reinforced a sense of regional identity; acted as a catalyst for research and conservation; contributed to regional development; reduced barriers to collaboration; and provided a formal working system for overcoming practical local problems (Canada/MAB 1987). The Canada/MAB Committee can provide a forum through which representation of the various parties involved with or affected by Park management decisions can meet to voice concerns or offer input. These parties may include government or local agencies, landowners around the Park, the First Nations people of the area or any other bodies concerned.

2.4 Sustainable Development and the RMBR

The fundamental paradox surrounding society's relationship to the environment, that of enjoying today and having for tomorrow, has existed for millennia (Nelson et. al. 1978). The concept of sustainable development



-  Core Zone ( Riding Mountain National Park )
  -  Zone of Cooperation ( Rural Municipalities )
- |                |                       |
|----------------|-----------------------|
| BOULTON        | STRATHCLAIR           |
| MCCREARY       | SHOAL LAKE            |
| ROSEDALE       | STE. ROSE             |
| SHELLMOUTH     | DAUPHIN               |
| SILVER CREEK   | GRANDVIEW             |
| CRANWILLIAM    | L.G.DISTRICT OF PARK  |
| GILBERT PLAINS | VILLAGE OF ROSSBURN   |
| OCHRE RIVER    | VILLAGE OF SHOAL LAKE |
| ROSSBURN       | TOWN OF DAUPHIN       |

Source: Environment Canada, Parks,(1985)

Figure 2-1. The Riding Mountain Biosphere Reserve.

Source : Environment Canada, Parks, (1985).

presents somewhat of a conundrum in that we are encouraged to meet our own needs yet not preclude future generations from meeting their own needs (World Commission on Environment and Development 1987). The implementation of the concept of sustainable development has generally proven to be very difficult. The Biosphere Reserve concept can be used to facilitate arrangements as it advocates both landscape ecology and sustainable development as Biosphere Reserves are meant to be practical ways of relating ecosystem conservation directly to issues of sustainable resource use (Francis 1985). The RMBR is a way of implementing the concept of sustainable development in that in the Biosphere Reserve, both use and conservation of the resources are practiced. Both the RMBR and the concept of sustainable development share the basic idea of trying to balance use, conservation, and preservation of our natural resources. The RMBR could help solve conflicting land and resource use issues through the use of regional integration and cooperative management. The National Park, the Biosphere Reserve residents, and the many First Nations residents of the area stand to benefit from cooperative management that ensures the sustainability of the land and resources of the RMBR.

### 2.5 First Nations View of Wildlife

The RMBR is home to a number of First Nations, including Keeseekoowenin, Rolling River, Valley River, and Waywayseecappo. It is important to be aware of the fact that Aboriginal people have a fundamentally different view of nature and wildlife than that held by the larger society. First Nations people consider that they have a unique relationship to wildlife and the land, as they generally view themselves as part of and belonging to the

land, not owning it. Their traditional view is that the earth is their mother and the animals are their brothers and sisters. First Nations people feel that..." earth is like a garden, because many things grow here, and the Indians are one of the things that grow here. The animals were given to the Indians so they could feed their children and old people, and everyone has always shared the food from this garden. Everyone here will always share. It's always been like that" (Richardson 1991).

Many First Nations people possess a sense of reverence for wildlife as they feel that animals and humans are closely related as both groups were believed to be created at the same time. Animals are also regarded as powerful spirits with mysterious, separate lives of their own, not lower, but if anything on a higher plane than human beings, and able to help or hurt with their power (Hughes 1987). The Indians of the Great Plains relied heavily on the buffalo for survival. They depended so heavily on the buffalo that these animals became a focal point of their culture, so much so that some Indian cultures regarded the buffalo as the closest of all animals to humans (Hughes 1987).

For many First Nations people, hunting was, and to some extent still is, a ceremonial part of life. Hunting is not viewed as... "war upon the animals, not a slaughter for food or profit, but a holy occupation"(Hughes 1987). Commonly gifts were left for the animals and every part of the carcass was used. Hunting was not seen as a contest between man and beast, rather as a spiritual encounter between two conscious beings who stood in reciprocal relationship to one another, a relationship that operated through ritual (Hughes 1987). It was believed that the animals were not hunted in a one-sided chase, rather they gave themselves up to the hunter and they willingly

sacrificed their beings so humans could live. Animals played such an important role in the cultural lives of First Nations people that many rituals became associated with hunting such as showing care and respect for the animals. Wildlife is so ingrained in the culture of the First Nations people that many feel humans often become animals upon their death. Given the traditional First Nations view of wildlife as their brothers giving themselves up so humans may live makes it difficult to differentiate between consumptive and non-consumptive activities from a First Nations perspective (Adamowicz et. al. 1994).

The First Nations people have been guaranteed certain hunting and fishing rights through legislation such as the Constitution Act of 1867 and the Numbered Treaties (Haugh 1994). By law, Treaty Indians have the constitutionally protected right to hunt year-round for food on all unoccupied Crown Lands or lands to which they otherwise have rights of access. As well, Treaty Indian hunters are not normally constrained by method of harvest restrictions, such as nightlighting, as are other hunters, excepting those dangerous hunting regulations to which status and non-status persons alike are subject (Bessey 1983). First Nations harvesting rights have been further guaranteed and defined by recent court decisions such as the Sparrow decision (Usher 1991).

## 2.6 Non-consumptive Valuation of Wildlife in Canada

It is part of our tradition, custom, and heritage in Canada to enjoy and utilize our abundant wildlife resources. However, utilization of a species does not necessarily have to be consumptive (ie. the animal does not have to be harvested). Studies have shown (Filion 1983, 1989, and 1993) that 10 percent or

less of Canadians are active consumers of wildlife and that over 90 percent of Canadians are non-consumptive users of our wildlife resources. A prime example of non-consumptive use of a wildlife resource is the polar bear watching industry in Churchill, Manitoba where polar bear viewing and photography attract visitors from around the world, resulting in a large economic benefit to the area.

Non-consumptive users include those who take trips primarily for non-consumptive purposes, especially to photograph or study wildlife, those who enjoy incidental wildlife encounters during trips or outings taken for another purpose, those who take part in residential wildlife activities such as feeding and observing wildlife around their home and those who take part in indirect wildlife activities such as reading, watching films on wildlife, or purchasing related arts and crafts (Filion et. al. 1993).

It is a popular misconception that because access to public land, water and wildlife for recreational purposes is free, these resources have no value. This is simply not true. Analytical tools have been devised to measure non-marketed recreational outdoor benefits (Jacquemot 1986). The concept of 'value' is often quite controversial in the environmental literature as the idea of 'value' runs the gamut from individual values to intrinsic values or values in nature independent of humans (Adamowicz 1992). Value to an economist is a somewhat narrower notion as it is the maximum amount an individual is willing to exchange for a good or service from the set of resources the individual controls or the minimum amount the individual would accept in exchange for the good (Adamowicz 1992). Value is usually measured in monetary units. It is important to remember that the total value of a good or

service is not usually the item of interest, rather the value of changes in quality, quantity, or price over time is more important.

Non-consumptive values of wildlife in Canada defy measurement in conventional economic terms. However, estimates of enjoyment can be quantified and evaluated into monetary terms through the use of certain economic techniques. These techniques have been applied elsewhere to document non-consumptive values of wildlife such as in the United States (Boyle and Bishop 1985) and also to document the consumptive uses of wildlife (Davis 1964).

#### 2.6.1 Methods of Non-consumptive Valuation

Many methods are available to place a monetary value on market failures (a good or service that is not typically bought or sold in the marketplace). Examples of market failures include things such as environmental amenities, such as clean air, scenic views, unpolluted water, biodiversity and aesthetic values. The values of these market failures or non-market goods or services are not typically captured in private markets and therefore must be measured using alternative (non-market valuation) techniques.

Non-market valuation involves elicitation of perceived preferences from respondents for certain goods or services to determine how important and thus how 'valuable' these goods and services are to society. Eliciting preferences is a challenging task because of the inherent problems associated with eliciting preferences in a reliable and systematic manner. However, there have been methods developed to derive monetary measures of the value of non-market goods and services. Some methods include assessing the value

of: outdoor recreational activities (Beardsley 1971); the effects of environmental amenities (Bergstrom et al. 1985); the effects of environmental amenities on property values (Blank et al. 1978); the value of forests (Crocker 1984); and the value of water resources (Carson and Mitchell 1986).

These techniques can be divided into two major groups : Direct Methods and Indirect Methods. The direct approach uses surveys or interviews to solicit preferences from individuals. These are then aggregated to form societal preferences. An example of this approach is the Contingent Valuation Method (ie. WTP/WTA). The indirect approach, also known as the market approach, relies on the use of market information. Examples of this approach include the Travel Cost Method and Hedonic Pricing.

## 2.6.2 Direct Methods of Non-Market Valuation

### 2.6.2.1 The Contingent Valuation Method

The contingent valuation method (CVM) is the most popular of the direct techniques (Adamowicz 1992). It uses a survey to measure consumer's willingness-to-pay (WTP) or willingness-to-accept compensation (WTA) for unpriced goods and services (Mitchell and Carson 1989). This approach is based on the idea that human beings are rational and are capable of answering questions to reveal their preferences for public goods and services (Mitchell and Carson 1989). The term contingent valuation arises from the fact that the valuation of the good or service is contingent on the assumption of a market existing for the good.



### 2.6.2.2 The Contingent Valuation Method and Consumer Surplus

Contingent valuation methods attempt to determine the amount of compensation, paid (WTP) or received (WTA), that will restore the initial enjoyment level of an individual who experiences an increment or decrement in the quantity of a good or service (Randall 1987). The contingent valuation method uses a direct approach - it basically asks people what they are willing to pay for a benefit, and/or what they are willing to receive by way of compensation to tolerate a loss (Pearce and Turner 1990). What is ultimately sought in contingent valuation method studies are the personal valuations of the respondent for increases or decreases in the quantity or quality of some good. The aim of the whole process is to elicit valuations (or "bids") from each of the respondents. These personal preferences can then be aggregated to form a societal preference for the good or service being measured.

The levels of WTP/WTA that are derived from contingent valuation method studies are referred to as consumer surplus. Consumer surplus is a measure of benefit and can be calculated in monetary terms. While we can safely assume that people will not be willing to pay for something they do not want, we cannot be sure that WTP as measured by market prices accurately measures the whole benefit to either individuals or society. The reason for this is that there may be individuals who are willing to pay more than the market price. If so, their benefit received is larger than market price indicates. The 'excess' that they obtain is known as consumer surplus (Pearce and Turner 1990). Consumer surplus is thus used to infer prices or 'values' of a good or service that is not typically captured in the market-place.

The valuation method used in this research project is based on the willingness-to-pay (WTP) concept. WTP has been frequently used in

recreational economic studies to measure the levels of consumer surplus being enjoyed for certain environmental goods or services. The consumer surplus represents the amount of money participants would pay over and above what they have actually paid, rather than forego a given experience (Jacquemot et. al. 1986).

The measuring of direct benefits received by participants from their wildlife-related activities is illustrated in Figure 2-2. The downward sloping curve A, B, C is the demand curve for wildlife-related activities. It is downward sloping due to the fact that at lower prices, more and more of the good is demanded. This economic principle is known as the law of demand (MacMillan and Pazderka 1989). If there were no cost or supply constraints, participants would consume a maximum of DC wildlife-related activities and the whole area ADC under the demand curve would represent the participants' WTP for these activities. This WTP would be equal to their consumer surplus (benefits received but not paid for) because there were no costs associated with their use of the wildlife.

However, in order to actually engage in wildlife-related activities, participants have to incur some level of expenditure on complementary goods and services such as the cost of food, travel, accommodation, equipment, or other costs. If the participants incur a certain level of costs (F), the quantity of activities demanded will decrease to DE due to the law of demand. Total WTP for these DE activities is DABE but actual expenditures are only DFBE. Thus the difference between these two polygons (FAB) represents the consumer surplus (the net willingness of participants to pay in excess of their actual participation costs) that is being enjoyed by participants for their wildlife-related activities (Figure 2-2 and Figure 2-3).

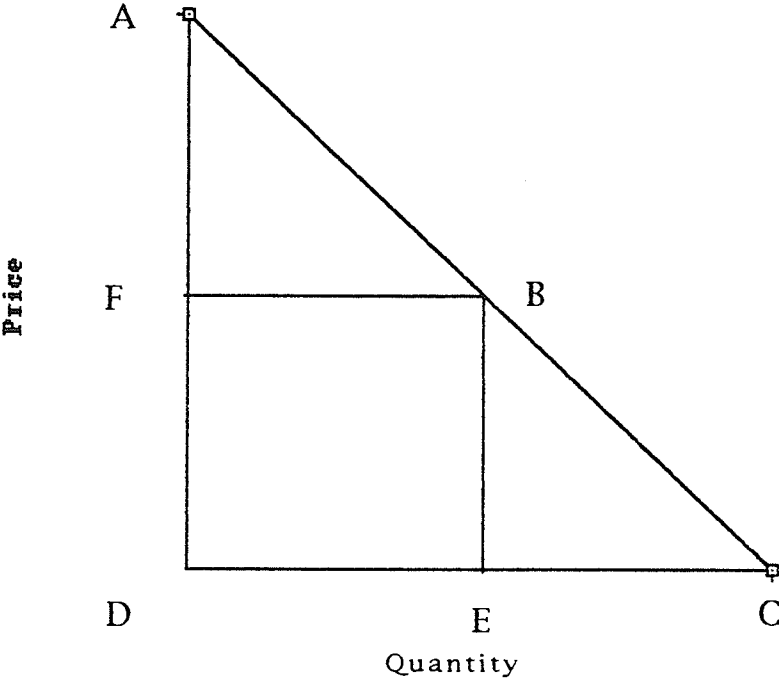
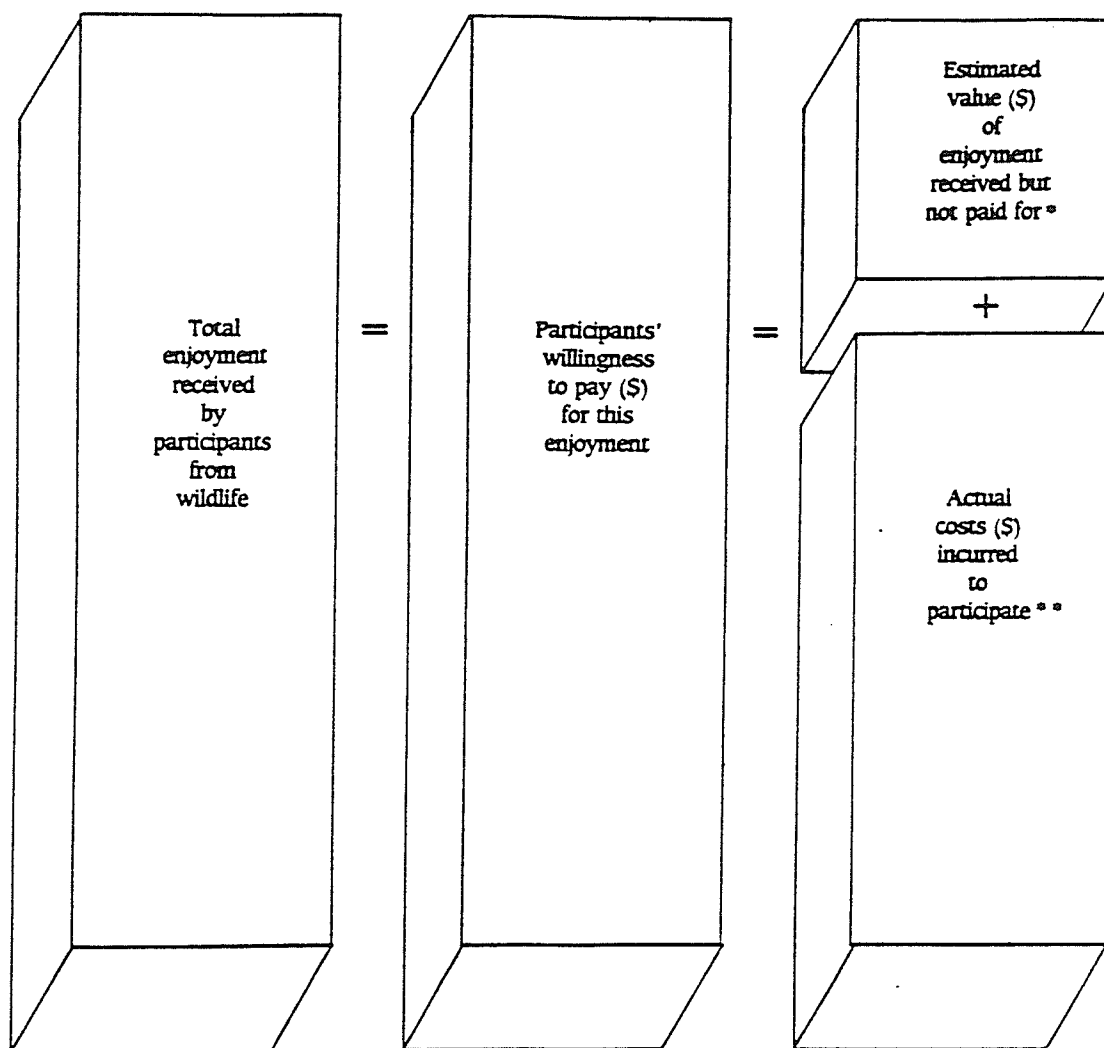


Figure 2-2. Measuring the direct benefits received by participants from their wildlife-related activities.



\*This value represents the amount of "Direct Benefit" received by participants in wildlife-related activities.

\*\*These expenditures are used to compute "Indirect Benefits" or impacts on the economy.

Figure 2-3. The enjoyment received by participants in wildlife-related recreational activities expressed in economic terms.

Source : Filion et. al., 1985.

Usually the CVM interview consists of three parts. In the first part the respondent is presented with the hypothetical market which describes the good or service to be valued, the range of available substitutes, and the method of payment or compensation. The second part consists of a set of valuation questions to elicit the respondent's maximum willingness-to-pay or willingness-to-accept compensation for the good or service being valued. The final step is optional and usually includes a set of questions about the respondent such as age, income level, marital status, etc. If the survey is carefully designed and administered, the responses to the valuation methods can be aggregated to form a societal WTP or WTA for a public good or service.

The CVM is based on the assumption that the respondents have a clear understanding of the good or service being valued, its current status, the hypothesized extent of changes in its quality or quantity and the method of payment (Mitchell and Carson 1989). It also assumes that the respondents are presenting their maximum levels of WTP and WTA, not what they think is a fair price in today's markets.

The main objective of CVM research is to obtain measures of consumer surplus from the respondents. This is the absolute maximum amount of money a respondent is willing to pay for or accept compensation for an environmental good or service before deciding to go without the good or service. Some respondents may find it difficult to reveal their preferences because of the nature of some goods and services. In order to facilitate the valuation process there have been methods developed to help researchers elicit responses from respondents (Mitchell and Carson 1989). These methods include:

- 1) The Bidding Game - a process whereby the researcher proposes a

starting bid and gradually revises the bid until a negative response is elicited from the respondent.

- 2) The Payment Card - a method in which cards are presented to respondents, each portraying a range of dollar values beginning at zero and increasing at fixed intervals. Each card also contains estimates for public goods from specific income groups. The respondent is given a payment card corresponding to his/her income level and asked to state a value for the good in question.

- 3) Open-ended Method - this method asks respondents to reveal their maximum WTP or WTA by offering a range of values to choose from, including a blank spot for the respondents to put a value in.

- 4) Close-ended Method - this method asks respondents to simply vote yes or no to values presented to them.

Although the CVM has many strengths and weaknesses, it has been considered by some to be a virtual panacea to the valuation of non-market goods (Adamowicz 1992). The major strength of the CVM lies in its flexibility. It can be used to measure use values, non-use values, and changes in the quality

of goods and services. Currently it is the only technique which can be used to estimate non-use values.

However, the CVM also suffers from a number of weaknesses, including:

- 1) Respondents may not be able to determine their preferences for the goods in question relative to other goods and services;
- 2) Respondents may respond in a way that does not reflect their true preferences;
- 3) Respondents may respond in a way that reflects attitudes as opposed to intended behavior;
- 4) Biases and undue influences may be caused by the questionnaire design or interviewer;
- 5) Identifying the relevant population can be difficult for some environmental values, particularly of non-use types;
- 6) Increased information and decreased uncertainty may change relative preferences for various environmental sources.

Source : Adamowicz, 1992.

Well designed surveys may reduce some of these weaknesses. However, CVM surveys of non-use values may be impossible to verify because they have no markets against which they can be tested.

### 2.6.3 Indirect Methods of Non-Market Valuation

Indirect methods rely on observations of existing behavior, usually behavior in economic markets, to discover the value of amenities (Adamowicz 1992). These methods are valid as long as the model being presented is a reasonable representation of what actually happens in the real world.

The market methods of valuation require the assumption that the environmental good, service or quality change has associated with it some type of market purchase, such as travel costs (ie. gasoline, hotel rooms, etc.). As a result of this assumption, if no market goods are consumed it is assumed there is no demand for the environmental good or service in question.

There are many credible indirect methods available for use; however, only two of the main indirect methods will be discussed. These are the valuation of recreational activities (Travel Cost Method) and the valuation of environmental services embodied in property values (Hedonic Price Methods).

#### 2.6.3.1 The Travel Cost Method

The Travel Cost Method (TCM) is a very popular indirect non-market valuation technique. The basic TCM is based on the premise that even when there is no entry fee to use a public recreation site such as a national park, visitors pay an implicit price for the site's attributes when they visit it, the implicit price being the cost of travel to the site (Randall 1987). Included in the travel costs are vehicle costs (ie. gas, oil, maintenance), general travel expenses (hotels, food, etc.) and finally time costs of the trip. When visitors come to a site from different origins, and therefore travel different distances, and there is variation in the number of days they visit the site, a demand curve for the number of trips can be derived. The demand curve can be used to determine the overall consumer surplus of the site and thus indicate the economic value of the site.

The basic TCM is based on a number of assumptions. First, it assumes that changes in demand for a market good, such as a new computer, will have no impact on the demand for recreation, such as a trip to a national park; only



the changes in the proportion of total income spent on the market good can affect the demand for recreation (Forestry Canada 1992). The second assumption is that all recreation choices are made simultaneously and all decisions are made at the beginning of the season. The third assumption is that trips of different lengths, such as day trips, two day trips, etc. to the same site are classified as different goods. The fourth assumption is that all prices of all goods are known with certainty. Finally, the last assumption is that the individual recreationist has no influence over any of the prices, costs, or site qualities involved.

The basic TCM only estimates the gross value of a site at a specific point in time. It tends to ignore the effects of quality changes on the demand for a site, and thus does not provide information on the value of quality changes over time (Randall 1987). A number of variations of the TCM have been developed to deal with site quality changes, including:

- 1) The Varying Parameter Travel Cost Method - in which the decision to visit a recreation site are based on the costs to visit the site and the characteristics of the site. A basic TCM does not attempt to incorporate the characteristics of the site into the evaluation framework.
  
- 2) The Hedonic Travel Cost Model - which also tries to incorporate site characteristics into the basic TCM. In this travel cost model, the focus is on estimation of demand for different site characteristics. This approach assumes that individuals are willing to pay more in travel cost to visit sites with higher quality attributes (Adamowicz 1992).

3) The Random Utility Model - imposes structures on how recreation choices are made by recreationalists. It assumes that choices are made independently over the seasons and that recreationalists try to maximize their utility by choosing one site over another. This model incorporates site qualities and also allows for substitution between possible recreation sites.

The many travel cost methods have advantages and disadvantages. The advantages include the fact that they derive values from past behavior rather than intentions or attitudes. This leads to the production of economic values and numbers. As well, TCM's provide a set of testable hypotheses which can be repeated by other researchers.

The general weaknesses of the TCM include:

- 1) The behavioral model specified by an analyst may not reflect the actual decision process of a recreationalist.
- 2) The observations of travel costs and site characteristics may not be enough to reasonably describe the decision process.
- 3) The measurement of the value of time (both the time used to travel to a site and the time spent on the site) and its use in demand modelling still plague the travel cost models.
- 4) The definitions of "site" and "origin" are still ad-hoc in travel cost models.
- 5) It is still not clear how to incorporate congestion in multiple-site models.
- 6) Travel cost models ignore demand uncertainty.
- 7) Different behavioral assumptions in travel cost models result in significantly different benefit measures.
- 8) Travel cost models cannot be used to measure the non-use values of natural resources and environmental amenities.

Source: Adamowicz, 1992.

### 2.6.3.2 Hedonic Price Models

The Hedonic Price Model (HPM) determines values for environmental quality changes from the implicit effect that quality has on market transactions (Adamowicz 1992). HPM's are based on the idea that goods are actually aggregations of characteristics and an individual's demand for goods relates to these characteristics. Therefore it is possible to estimate the demand level for quality because the demand for quality attributes is reflected in the prices and consumption levels of goods. For example, if there are two identical houses but one is located on a cliff with a majestic view and the other is located by a stockyard, it is likely that the one on the cliff will have more 'value' as it is associated with more desirable environmental amenities.

The HPM has many strengths and weaknesses. The major strength of the HPM is that it represents a realistic demand and supply framework for determining the value of changes in the quality of environmental attributes. Also, HPM's rely on already quantified expenditure data that is readily available.

The weaknesses of HPM's are:

- 1) Individual's perceptions of quality attributes differ and change through learning and time.
- 2) Uncertainty issues are ignored in this model.
- 3) If the property values contain the capitalized values of recreation then the hedonic implicit price will over-estimate the marginal willingness to pay for an attribute.
- 4) HPM's do not capture non-use benefits.

Source: Adamowicz, 1992.

## 2.7 The National Surveys on the Importance of Wildlife to Canadians

Perhaps the most well-known attempts to quantify the economic values of wildlife to Canadians are the Surveys conducted by Filion et. al. for the years 1981, 1987, and 1991. The National Surveys on the Importance of Wildlife to Canadians are conducted by Statistics Canada in cooperation with the Canadian Wildlife Service approximately every five years. The main purpose of these Surveys is to document the economic significance of the recreational uses of wildlife to Canadians. The Surveys are administered by Statistics Canada as a supplement to its Labour Force Survey and are distributed by mail to roughly 100 000 Canadian residents aged fifteen years of age or older, not including Canadian residents living in the Yukon or the Northwest Territories, in institutions, on Indian Reserves or full-time members of the Armed Forces.

### 2.7.1 Results of The 1981 National Survey

This survey showed that wildlife related activities were one of the most common forms of recreation engaged in by Canadians and that 90.1% of Canadians aged 15 years or more had been involved in some form of wildlife related activity, spending \$4.2 billion on these activities (Filion et. al. 1988). Coupled with these expenditures, participants further expressed a willingness to spend an additional \$1 billion in excess of their already incurred costs. As well, more than 80% of the survey sample expressed strong support for maintaining abundant wildlife and for preserving endangered species.

A dedicated core group of Canadians (17% of the population) participated in four or five related activities and were responsible for 66% of the \$4.2 billion and 40% of the 996.2 million days expended on wildlife in 1981. Of the \$4.2 billion in expenditures on all wildlife-related activities, primary

non-consumptive wildlife trips accounted for 49.9% of expenditures while hunting accounted for 28.2% of wildlife-related expenditures (Filion et. al. 1983,1988).

#### 2.7.2 Results of The 1987 National Survey

In 1987, more than 18 million Canadians or 91.2% of the Canadian population spent 1.2 billion days taking part in wildlife-related recreational activities (Filion 1990). Data on expenditures shows that \$5.1 billion was spent on wildlife activities as a whole, four-fifths of which was spent on non-consumptive uses of wildlife. Of these non-consumptive uses, \$1.3 billion (25.3% of total expenditures) was spent on purchasing, maintaining or improving natural areas for wildlife habitat. As well, 83.3% of the population felt that it was very or fairly important to maintain abundant wildlife populations in Canada.

#### 2.7.3 Results of The 1991 National Survey

The 1991 Survey confirmed the popularity and importance of wildlife to Canadians as it found that 90.2% of the population or 18.9 million Canadians took part in some form of wildlife-related activity in Canada, devoting 1.3 billion days and \$5.6 billion to these activities (Filion et. al. 1993). 86.2% of Canadians feel that it is important to maintain abundant wildlife populations and over 60% of Canadians would be willing to pay increased taxes or prices to protect wildlife habitat (Filion et. al. 1993).

### 2.7.3.1 Indirect Wildlife-related Activities

In 1991, 84.7% of the population (17.7 million people) participated in some form of indirect wildlife-related activity with watching films or television programs on wildlife being the most popular form of indirect wildlife-related activity. 1.2 million Canadians reported maintaining, improving, or purchasing natural areas to provide food or shelter for wildlife.

### 2.7.3.2 Non-consumptive Residential Wildlife-related Activities

69.5% of the respondents (14.5 million Canadians) reported engaging in some form of residential wildlife-related activity. Watching and feeding wildlife were two of the most popular activities with Canadians spending roughly 1.1 billion days engaged in this activity for an average of 74.4 days per participant. Total expenditures for this activity were \$445.6 million, for an average yearly expenditure of \$31 per participant.

### 2.7.3.3 Primary Non-consumptive Wildlife-related Trips

Primary non-consumptive trips were taken by roughly 18.7% of the Canadian population (3.9 million people) in 1991. Watching and photographing wildlife were common activities on many of these trips. Canadians spent an estimated 84.3 million days on these trips for an average of 21.6 days per participant. As well, an estimated \$2.4 billion was spent on these trips, the average participant spending roughly \$619 during the year or \$28 per day to partake in these trips (Filion et. al. 1993). It is interesting to note that of these 3.9 million trips, roughly 3.8 million of them were taken in Canada with the remainder being taken in the United States.

#### 2.7.3.4 Incidental Wildlife Encounters During Other Trips or Outings

35.9% of the Canadian population (7.5 million people) encountered wildlife incidentally while on trips taken for purposes other than viewing wildlife. Roughly 143.4 million days were spent on these trips for an average of 19.1 days per participant. These participants also spent \$113.9 million or \$15 per participant in extra costs needed to see wildlife while on these trips taken for other purposes (Filion et. al. 1993).

#### 2.7.3.5 Consumptive Wildlife-related Activity - Hunting

It was found that 7.4% of Canadians (1.5 million persons) were active hunters of wildlife and these hunters took hunting trips within Canada over 99% of the time (Filion et. al. 1993). Canadian hunters spent roughly 24.3 million days pursuing this activity, for an average of 15.7 days per participant. The greatest amount of time spent hunting was in pursuit of large mammals (37.1% of the total) as compared to small mammals (24.9%), birds other than waterfowl (24.5%) and waterfowl (13.5%). Canadians spent almost \$1.2 billion hunting wildlife in 1991, with the average hunter spending \$769 per year or \$48 per day of participation in this activity.

### 2.8 Canadian Trends in Wildlife-related Activities Since 1981

A comparison of the results of the three Surveys shows that Canadians value wildlife and have remained committed to wildlife-related activities over the decade. The growth of wildlife-related activities as a whole (13.3%) has exceeded the growth of the Canadian population (13.2%) over the decade (Filion et. al. 1993). The number of participants grew from 16.6 million in 1981 to 18.2 million in 1987 to 18.9 million in 1991. It is noteworthy that

participation in primary non-consumptive trips increased slightly over the decade whereas participation in hunting decreased steadily over the same period (Figure 2-4).

A comparison of expenditures is also possible among the three surveys. However, these numbers may be misleading because of the fact that the Surveys measure dollar amounts using current dollars (which does not factor out inflation between time periods) instead of using constant dollars (which does factor out inflation between time periods)

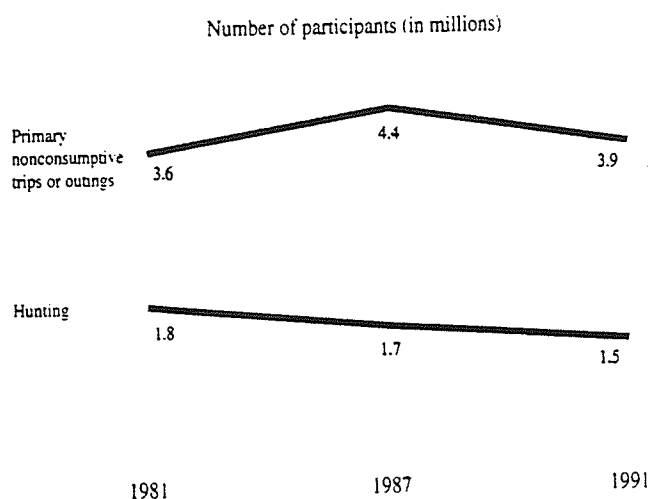


Figure 2-4. Trends in participation by Canadians in primary non-consumptive trips or outings and in hunting, 1981, 1987, and 1991.

Source : Filion et. al., 1993.

Over the time period 1981 - 1991, the total number of days Canadians have spent on all wildlife-related activities as a whole has increased by 34.5%, going from 992.0 million days in 1981 to 1.2 billion days in 1987 to 1.3 billion days in 1991. As well, over the same time period the total expenditures on wildlife-related activities as a whole increased by 32.9%, going from \$4.2 billion in 1981 to \$5.1 billion in 1987 to \$5.6 billion in 1991 (Filion et. al. 1993).



## 2.9 The Non-consumptive Valuation of Wildlife in Manitoba

The National Surveys on the Importance of Wildlife to Canadians for the years 1981, 1987 and 1991 also included information broken down on a provincial basis. The information for the province of Manitoba is as follows.

### 2.9.1 The 1981 Survey

In 1981, the residents of Manitoba are estimated to have spent roughly \$158.8 million on all wildlife-related activities. Of this total, about 35% was spent on hunting and the remaining 65% was spent on non-consumptive uses of wildlife, other wildlife-related activities and contributions to wildlife-related organizations (Jacquemot 1986). Manitobans were willing to pay an additional \$38 million or 24% of their already incurred total expenditures before deciding not to participate in wildlife-related recreation (Jacquemot 1986).

### 2.9.2 The 1987 Survey

Manitoba residents spent over \$195 million on all wildlife-related activities. Of this total, roughly \$65 million (1/3) was spent on consumptive activities and the rest, \$130 million, was spent non-consumptive activities. The impacts of these expenditures on the economy of Manitoba result the supporting of 6327 jobs in Manitoba and the generation of \$33 million in taxation revenue for the provincial and local governments (Filion et. al. 1990).

There are benefits derived from wildlife above and beyond the direct expenditures incurred to engage in recreational uses of wildlife. One way to measure these benefits is the WTP method described earlier in section 2.6.2. In 1987, residents of Manitoba expressed a willingness to pay \$39.8 million in

excess of their current expenditures before deciding to forego their wildlife-related activities. Of this amount, over half (52%) was attributable to participants in primary non-consumptive trips and the remaining 48% was attributable to participants in consumptive activities (Filion et. al. 1990).

### 2.9.3 The 1991 Survey

The 1991 Survey confirmed that wildlife plays an important role in the lives of Manitobans and the economy of Manitoba as 755 000 Manitoba residents aged 15 years or older (93.2% of the population) participated in a wide range of wildlife-related activities (Filion et. al. 1993). Of this total, an estimated 721 000 residents participated in indirect activities, 575 000 participated in residential activities, 152 000 residents took at least one primary non-consumptive trip, 302 000 encountered wildlife incidentally during other trips or outings, and 67 000 Manitoba residents hunted wildlife.

Manitoba residents spent an estimated \$158.6 million and 49.7 million days on all wildlife-related activities combined. Of these totals, 40.6 million days were devoted to residential activities, 5.3 million days were spent on incidental wildlife encounters, 2.9 million days were devoted to primary non-consumptive trips, and 954 000 days were spent on hunting. As for the \$158.6 million worth of expenditures on wildlife-related activities, \$63.4 million (40.0% of the total) was spent on primary non-consumptive trips, \$44.3 million (28.0% of the total) was spent on hunting, and the rest of the money, \$50.9 million (32% of the total) was spent on other wildlife-related activities.

The 1991 Survey analysis looked at trends in expenditures by Manitobans for wildlife-related activities (Figure 2-5) and at the average yearly and daily expenditures by participants in wildlife-related activities.

Average yearly expenditures for consumptive users was \$663 and for people on primary non-consumptive trips was \$417. As well, daily expenditures for consumptive users was \$46 whereas daily expenditures for people on primary non-consumptive trips was \$22. Clearly, both yearly and daily average expenditures were higher for participants in consumptive uses than for participants in primary non-consumptive trips. However, seeing as participants in primary non-consumptive trips took almost three times as many trips as did consumptive users in the year 1991 (2.9 million primary non-consumptive trips vs. 1.0 million consumptive trips), primary non-consumptive trips represented a larger economic activity than did consumptive trips (\$63.4 million vs. \$44.3 million).

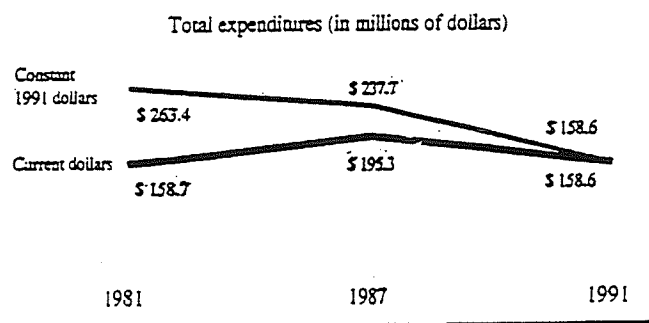


Figure 2-5. Trends in total expenditures by Manitoba participants in wildlife-related activities, 1981, 1987, and 1991.

Source : Filion et. al., 1993

#### 2.9.4 Participant Profiles

Analysis of the 1991 Survey was conducted to determine typical profiles of participants in recreational wildlife use in Manitoba. The analysis revealed that participants in non-consumptive activities resemble that of the general

population, except that participants who took primary non-consumptive trips or encountered wildlife incidentally while on other trips were more concentrated among Manitoba residents under the age of 45. Also, consumptive activity was more common among men than women, among rural residents and among younger people, particularly those between 25 and 34 years of age. The analysis also showed that in terms of average days spent per participant, men spent more time than women on all wildlife-related activities except residential activities. As well for consumptive users, the average number of days spent at the activity of hunting decreased as the age of the participant increased. The reverse is true for residential wildlife activities. As a participant's age increases the average number of days spent on residential wildlife activities increases. Finally, rural residents on average tended to spend more time on all activities than urban residents.

#### 2.10 Comparisons Between the 1981, 1987, and 1991 Surveys for Manitoba

A comparison of the results of the three Surveys will help to gain insight as to the economic importance and popularity of wildlife-related activities in Manitoba. When the results of the 1991 Survey are compared to those of 1987 and 1981, it is evident that participation in wildlife-related activities as a whole increased by 10.1% over the decade, whereas Manitoba's population grew by only 6.4% during the same period (Filion et. al. 1993). Participation in primary non-consumptive trips increased between the 1981 and 1987 Surveys but then declined somewhat in the 1991 Survey (Figure 2-6). Participation in hunting declined steadily throughout the decade (Filion et. al. 1993).

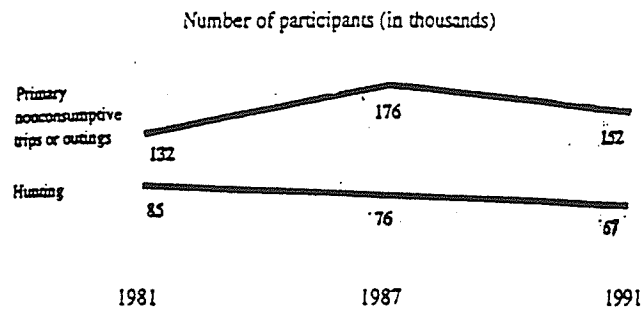


Figure 2-6. Trends in participation by Manitoba residents in primary non-consumptive trips or outings and in hunting, 1981, 1987, and 1991.

Source : Filion et. al., 1993.

A comparison of the three Surveys also shows that the total number of participant days spent on all wildlife-related activities increased by 24.2% between 1981 and 1991, from 40.0 million in 1981 to 49.7 million in 1991. The number of days spent by participants on primary non-consumptive trips increased between 1981 and 1987 but then decreased in 1991 (Figure 2-7). The number of participant days spent on hunting steadily declined throughout the period (Filion et. al. 1993).

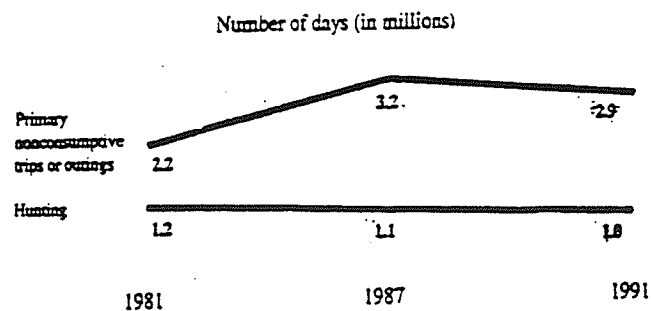


Figure 2-7. Trends in total number of days on which Manitoba participants engaged in primary non-consumptive trips or outings and in hunting, 1981, 1987, and 1991.

Source : Filion et. al., 1993.

Finally, a comparison of expenditures is possible among the three Surveys. A comparison of this sort shows that total expenditures on wildlife-related activities increased from \$158.7 million in 1981 to \$195.3 million in 1987 but then decreased to \$158.6 million in 1991. However, these numbers may be misleading because of the fact that the Surveys measure dollar amounts using current dollars instead of using constant dollars. An analysis of the expenditures for the three time periods using constant dollars shows a marked decline in total wildlife-related expenditures over the decade. However, it should still be kept in mind that the expenditures on wildlife-related activities in Manitoba represent a significant financial outlay and have a large impact on the provincial economy.

## CHAPTER THREE

### RESEARCH METHODOLOGY

Two questionnaire surveys were conducted within the following target populations in Riding Mountain National Park and in the Riding Mountain Biosphere Reserve: RMNP campers and visitors, RMNP cabin and cottage owners, seasonal residents around the Park, permanent residents of the RMBR, absentee landowners of the RMBR, and First Nations residents of the RMBR. The questionnaires were based on those used by Statistics Canada and the Canadian Wildlife Service to solicit information for the National Surveys on the Importance of Wildlife to Canadians. However, the present study focuses only on large mammals. Definitions of terms and copies of the questionnaires used can be found in the Appendices.

#### 3.1 RMNP Campers and Visitors

RMNP visitors and people in the campgrounds were surveyed during the month of August, 1993. The methodology consisted of the researcher simply walking up to campers while they were at their campsites and either giving them the survey to fill out on their own or asking them the survey questions as they performed other chores such as cooking or washing dishes.

To assist in the process of conducting the surveys with campers, certain camping areas were targeted. The targeted camping areas were chosen by the researcher and Park Warden Mr. Pat Rousseau and consisted of the Wasagaming campground, the Lake Audy campground, the Moon Lake campground, and the Whirlpool Lake campground. These four campgrounds were chosen for a number of reasons but mainly to ensure that surveys were

conducted with a representative cross-section of the types of people that visit RMNP campgrounds. For example, the Wasagaming campground tends to attract all types of campers from all age groups, but especially people who want to be close to the townsite for shopping and convenience reasons. The Lake Audy and Whirlpool Lake campgrounds tend to attract people in search of a more primitive camping experience. The Moon Lake campground also tends to attract campers looking for a primitive experience, but perhaps not as primitive as that offered by Lake Audy or Whirlpool Lake.

### 3.2 RMNP Cabin and Cottage Owners

Surveys were conducted by the researcher with people who either owned or rented cabins or cottages in the Park during August, 1993. This target population includes the people in the cottages along the shore of Clear Lake as well as the people in the cabins on 1st - 5th Street. The researcher asked the residents to either fill out the survey on their own or to respond orally to questions asked by the researcher.

### 3.3 Seasonal Residents Around the Park

This target population consisted of the people who either owned or rented residences in Grey Owl Estates or Sportsman's Park. Surveys were conducted with these people during August, 1993. The methodology consisted of the researcher approaching the residents and getting them to either fill out the survey in writing or orally.



### 3.4 Permanent Residents of the RMBR

The RMBR consists of 18 local municipalities around the Park and is thus far too big an area to study in its entirety for this research project. The total population of the RMBR is roughly 25 000 people, 13 000 of which (the rural population only) were the target group for this study. Rather than trying to sample all 18 municipalities (Figure 2-1), four representative municipalities were chosen, with the help of John Whitaker. The four were the R.M. of Grandview, the R.M. of McCreary, the R. M. of Rossburn, and the L.G.D. of Park. All border on a large piece of Park property, have a good geographical spread, and all have active members of the Riding Mountain Biosphere Reserve Management Committee, thus increasing the likelihood of good questionnaire returns.

A mail-out survey was used, with participants randomly selected from municipal voters lists to achieve a sample size of roughly 300, as recommended by Dr. Carl Schwartz, Department of Statistics, University of Manitoba. These lists differentiate between the permanent residents and non-permanent residents (ie. absentee landowners) of the areas. All of the permanent residents on each of the four R.M. lists were highlighted and starting from the top of the list, every eighth permanent resident name was chosen as a mailing target. The number of permanent residents on all four lists divided by 8 gave a sample size of 301 names.

The mailing out of the surveys took place in December, 1993 and contained a copy of the survey, a covering letter, and a self-addressed stamped envelope for returning the completed survey. A one page follow-up reminder was sent out two weeks after the survey to prompt the recipients to mail back their responses. Completed surveys were returned as late as March, 1994.

### 3.5 Absentee Landowners of the RMBR

The methodology is the same as that used for the permanent residents. The same rural municipalities were used and the surveys went out on the same dates. However, instead of using every eighth name on the voters lists, every third name was used to yield an acceptable sample size of 152 as recommended by Dr. Carl Schwartz, Department of Statistics, University of Manitoba. When choosing the names from these lists, if the chosen name had a mailing address in the United States, Costa Rica or any other location that was far away and thus made a response unlikely, these names were dropped and the next available name was used.

### 3.6 First Nations Residents of the RMBR

First Nations residents of the RMBR, specifically the Keeseekoowenin First Nation, were surveyed using a questionnaire and a specially developed interview guide that was somewhat shorter than the survey. The interview guide was developed following several initial discussions with the Chief and Band Council members. The questionnaire forms were delivered to the community in August, 1994 and were administered by Mr. Brion Whitford of the Keeseekoowenin First Nation. It was considered that this approach was culturally more appropriate and therefore would be more conducive to better reception by the community, thus increasing the likelihood of more complete survey coverage of the Keeseekoowenin First Nation.

### 3.7 Data Analysis

The data was analyzed via the use of a spreadsheet package, Statview SE+ Graphics, version 1.03. The histograms were produced using Cricket Graph, version 1.2.1.

## CHAPTER FOUR

## RESULTS

## RIDING MOUNTAIN NATIONAL PARK VISITORS SURVEY

4.1 Wildlife-related Activities

Respondents were asked a number of questions regarding their level of interest in participating in a variety of wildlife-related activities such as watching, photographing, or studying/identifying large mammals. They were then asked questions as to which of the activities they actually took part in as well as which of the large mammal species they had either seen, photographed, or studied. The results of these questions are contained in Tables 4-1, 4-2, and 4-3.

Table 4-1. - Various activity interest rates.

Respondent's interest in participating in various activities.

Activity	<u>Interest In Participation</u>		
	Great	Some	None
Watching large mammals	144 (75%)	40 (21%)	7 (4%)
Photographing large mammals	70 (37%)	77 (40%)	44 (23%)
Studying/identifying large mammals	54 (28%)	75 (39%)	62 (33%)

The high percentage of visitors interested in watching wildlife is reflected in many of the comments that were received on the questionnaires. Many of the comments reflected the idea that wildlife makes the Park a special place. One comment read as follows, "Large mammals as a resource are almost obsolete. In North Dakota people come from hundreds of miles to see the bison. I suggest you treasure your resource and keep them wild. I was absolutely fascinated with all I saw and will definitely come back."

Table 4-2. - Various activity participation rates.

In which of the following activities did you participate? (Mark all that apply). \*

Activity	Number of responses**
Watching large mammals	120 (53%)
Photographing large mammals	64 (28%)
Studying/identifying large mammals	42 (18%)
Other	3 (1%)

Notes :

\* This and all following questions were asked only to those respondents who answered "yes" to the question in Table 4-5.

\*\* Because each respondent could answer more than one activity, the total number of responses (229) exceeds the total number of respondents (122).

Table 4-3. - Various large mammal usage rates.

Which of the following did you watch, photograph or study? (Mark all that apply).

Species of large mammal	Number of responses*
Bison	84 (23%)
Black bear	79 (22%)
Elk	56 (16%)
Moose	83 (23%)
White-tail deer	45 (12%)
Other	15 (4%)

Notes :

\* Because each respondent could answer more than one species, the total number of responses (362) exceeds the total number of respondents (122).

One respondent added the comment "Drive to the bison compound 5 times a year." after this question.

4.2 Importance of Wildlife for Park Enjoyment

Respondents were asked a number of questions concerning their views on wildlife, specifically how important maintaining abundant wildlife populations was to them, if wildlife was one of their reasons for coming to RMNP, and the general effect encountering wildlife had on their visits to the Park. The results of these questions are contained in Tables 4-4, 4-5, and 4-6.

Table 4-4. - Importance of large mammal abundance.

How important is it to you that the abundance of the large mammal species of RMNP and surrounding area be maintained?

Very important	Fairly important	Of little importance	Of no importance	Don't know
160 (84%)	31 (16%)	0	0	0

One respondent wrote after this question "Animals make the Park a special place to visit and thus should be cherished."

Table 4-5. - Purpose in coming to RMNP.

Does your primary or secondary purpose in coming to RMNP and surrounding area include watching/photographing/studying the large mammal populations of the area?

Response	Number of respondents
Yes	122 (64%)
No	69 (36%)

From the general comments that were volunteered by the respondents, it seems that for some of the Park visitors wildlife is a secondary purpose. A few respondents echoed sentiment along the lines of the comment "Animals are a bonus to the whole Park package." However, comments such as "Wildlife makes the Park" were also volunteered.

Table 4-6. - Effects of encountering large mammals.

In general, what effect did encountering large mammals have on your visits to RMNP and surrounding area?

Response	Number of respondents
Increased enjoyment very much	102 (84%)
Increased enjoyment somewhat	13 (11%)
Made no difference	4 (3%)
Decreased enjoyment somewhat	3 (2%)
Decreased enjoyment very much	0 (0%)

95% of respondents felt that encountering large mammals increased their enjoyment of RMNP. This was expressed in comments such as "Wildlife makes the Park. I drive in from Dauphin almost every weekend" and "We come from Alberta for 2 weeks every summer. Love wildlife and is good for kids to see wildlife." and "Animals make the trips worthwhile."

#### 4.3 Time Spent With Wildlife

To gain an understanding of the total amount of wildlife usage in the area, respondents were asked to provide information concerning the number of days they spend on trips to the area as well as the number of trips they take/year to the area. The results of these questions are contained in Tables 4-7 and 4-8.



Table 4-7. - Time spent in RMNP (#of days).

In this outing to RMNP and surrounding area, how many days were spent on this trip?

	<u>Area campground*</u>								<u>Total</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	
Number of days (all respondents)	298	35	28	24	111	46	6	4	552
Number of respondents	67	11	9	8	5	14	5	3	122
Average number of days/ respondent**	4.4	3.2	3.1	3.0	22.2	3.3	1.2	1.3	4.5

Note :

\* Area campground 1 = Wasagaming campground, 2 = Lake Audy campground, 3 = Moon Lake campground, 4 = Whirlpool Lake campground, 5 = the cottages and cabins within the Park, 6 = random interviews in the Park, 7 = Grey Owl Estates, 8 = Sportsman's Park.

\*\* If the average number of days/respondent is recalculated without including the people in Area campground #5 the average number of days/respondent drops to 3.8.

Table 4-8. - Time spent in RMNP (#of trips/year).

How many trips did you take over the past year?

	<u>Area campground*</u>								<u>Total</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	
Number of trips (all respondents)	147	43	23	37	35	33	50	12	380
Number of respondents	67	11	9	8	5	14	5	3	122
Average number of trips/ respondent	2.2	3.9	2.6	4.6	7.0	2.4	10	4.0	3.1

Note :

\* Area campgrounds same as in Table 7.

#### 4.4 Willingness-to-pay for Wildlife

Respondents were asked to provide information as to how much money they would be willing to pay/year to ensure that the abundance of large mammals was maintained in RMNP. The results of this question are contained in Table 4-9.

Table 4-9. - WTP for abundance of large mammals.

How much would you be willing to pay/year to ensure the abundance of large mammals is maintained in RMNP and surrounding area?

Willingness to pay/year \$	Number of responses	Total willingness to pay \$
0	4 (2%)	0 x 4 = 0
1 - 19	42 (22%)	10 x 42 = 420
20 - 49	62 (32%)	35 x 62 = 2170
50 - 99	38 (20%)	75 x 38 = 2850
100 - 199	30 (16%)	150 x 30 = 4500
200 - 299	5 (3%)	250 x 5 = 1250
300 - 399	1 (.5%)	350 x 1 = 350
400 - 599	1 (.5%)	500 x 1 = 500
600 or more	8 (4%)	600 x 8 = 4800
Total	191 (100%)	16 840

The average willingness-to-pay/respondent to maintain the abundance of large mammals is  $16840/191 = \$88$ .

98% of respondents indicated they were willing-to-pay to help ensure the abundance of large mammals is maintained in RMNP and surrounding

area. Of the 2% of respondents that were not willing-to-pay, comments were received such as "Willing-to-pay nothing. Should be covered by my taxes."

Respondents were subsequently asked questions concerning their expenditures for their present trip to the RMNP area (Questions 9 and 10). These expenditures were recorded and average costs/trip were calculated and used during analysis. Table 4-10 displays the respondents' expenditures.

Table 4-10. - Non-consumptive expenditures.

In this outing to RMNP and surrounding area, how much did you spend to watch, photograph or study the large mammal populations?

Category of expenditure	Gross expenditures (\$)	Average expenditure/respondent (\$)
Transportation	6112	50 (N = 122)
Accommodation	5420	48 (N = 112)
Food	9392	82 (N = 114)
Equipment	6180	167 (N = 37)
Other Items	1432	18 (N = 80)
Total	28 536	365

Following the questions regarding expenditures, respondents were asked if they would still have taken their trip to the RMNP area if their costs had been more, and how much more they would have spent before deciding not to take their trip to the RMNP area (thus revealing their level of consumer surplus). The results of these questions are contained in Tables 4-11 and 4-12.

Table 4-11. - Number of respondents that would still come if their costs had been more.

Would you still have taken these trips if your costs had been more?

Response	Number of respondents
Yes	122 (100%)
No	0 (0%)

Table 4-12. - Post-expenditure WTP.

How much more would you have spent before deciding not to take these trips in 1993?

Willingness to pay (\$)	Number of responses	Total WTP
1 - 19	10 (8%)	10 x 10 = 100
20 - 49	31 (25%)	35 x 31 = 1085
50 - 99	26 (21%)	75 x 26 = 1950
100 - 199	35 (29%)	150 x 35 = 5250
200 - 299	10 (8%)	250 x 10 = 2500
300 - 399	7 (6%)	350 x 7 = 2450
400 - 599	2 (2%)	500 x 2 = 1000
600 or more	1 (1%)	600 x 1 = 600
Total	122 (100%)	14 935

The average post-expenditure willingness-to-pay for 1993 was  $14935/122 = \$122$ . This means that on average, each visitor surveyed was willing to pay in total an additional \$122 on top of their already incurred

expenditures (average expenditure = \$365) for the chance to enjoy RMNP's large mammal populations (Figure 4-1).

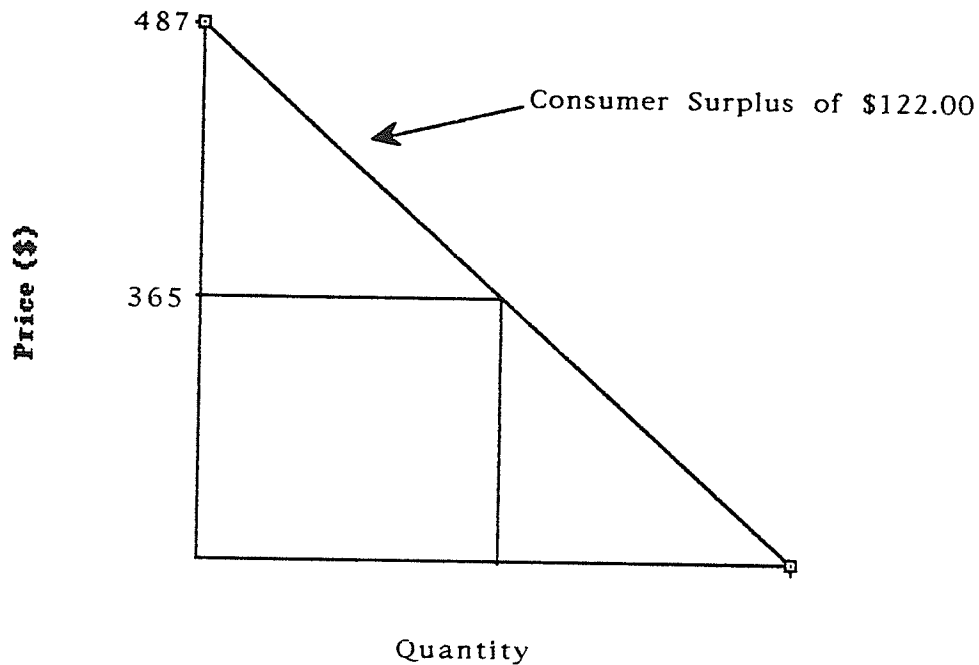


Figure 4-1. The average level of consumer surplus being enjoyed by Park visitors.

Figure 4-1 displays the average consumer surplus being enjoyed by Park visitors for their non-consumptive large mammal usage. The total average benefit being derived by Park visitors is \$487. However, the average expenditures being incurred by Park visitors is only \$365, thus resulting in an average consumer surplus of \$122 per Park visitor.

## CHAPTER FIVE

## RESULTS

## RIDING MOUNTAIN BIOSPHERE RESERVE RESIDENTS SURVEY

5.1 Residency, Completion Rates and Respondent Demographics

The first four questions of this survey were aimed at collecting background information on the respondents such as residency (permanent vs. non-permanent), municipality of residence, age and gender. This information and the number/percentage of completed returns per municipality are displayed in Tables 5-1 through 5-4.

Table 5-1. - Residency status.

Are you a permanent resident or non-permanent resident of the area?

Residency	Count
Permanent	136 (67%)
Non-permanent	67 (33%)

Table 5-2. - Number of completed returns and percent completion rate by municipality.

Municipality	Permanent residents	Non-permanent residents	Percentage of total returns
Grandview	41 (49%)	10 (43%)	51 (48%)
McCreary	37 (54%)	8 (30%)	45 (47%)
Park	24 (35%)	23 (45%)	47 (39%)
Rossburn	34 (42%)	26 (51%)	60 (45%)
Total	136 (45%)	67 (44%)	203 (45%)

Table 5-3. - Gender distribution of respondents.

Male	Female	Unknown	Total
123 (61%)	77 (38%)	3 (1%)	203 (100%)

Table 5-4. - Age distribution of respondents.

Age group (years)	Number of respondents
under 25	9 (4%)
26 - 40	45 (22%)
41 - 55	76 (37.5%)
over 56	72 (36%)
unknown	1 (.5%)

### 5.2 Wildlife - related Activities

Respondents were asked a number of questions regarding their interest in participating in a variety of wildlife-related activities (both consumptive and non-consumptive activities). They were then asked in which activities they actually took part in and which species of large mammals their activities involved. This information is contained in tables 5-5 - 5-7.

Table 5-5. - Various activity interest rates.

Respondent's interest in participating in various activities.

Activity	<u>Interest in Participation</u>		
	Great	Some	None
Watching large mammals	95 (48%)	84 (42%)	19 (10%)
Photographing large mammals	37 (20%)	84 (45%)	67 (35%)
Studying/identifying large mammals	42 (23%)	86 (48%)	53 (29%)
Feeding large mammals	35 (19%)	64 (35%)	84 (46%)
Hunting large mammals	45 (24%)	34 (19%)	105 (57%)
Other	12 (17%)	9 (13%)	48 (70%)

The comments volunteered by respondents concerning their large mammal activity participation varied drastically. Some respondents said "...enjoy watching and studying animals very much, especially in the elk rut," or animals are "a great delight to children who catch a glimpse of them, as well as adults." However, many respondents had negative comments about the large mammals of the area: "They have done at times alot of damage, which runs into alot of money, but up to this day I have never been approached by any government or organization as to what damage they have done or are doing. I have had fences torn down, strawberries and fruit trees damaged, fields of crops and hay trampled in wet weather, sewer lines torn up, garbage cans bent up, and clothes torn off clothes lines by bears."



Table 5-6. - Various activity participation rates.

In which of the following activities did you participate? (Mark all that apply).\*

Activity	Number of responses**
Watching large mammals	69 (45%)
Photographing large mammals	34 (22%)
Studying/identifying large mammals	36 (23%)
Other	16 (10%)

Notes :

\* This and all following questions were asked only to those respondents who answered "yes" to the question in Table 5-9.

\*\* Because each respondent could answer to more than one activity, the total number of responses (155) exceeds the total number of respondents (75).

Many respondents wrote comments after this question such as "When driving in the area, we like to stop and watch the animals, and take pictures out of car window when safe to stop." Still many others said they simply enjoyed the animals they saw on their farms while they worked the land.

Table 5-7. - Various large mammal usage rates.

Which of the following did you watch, photograph or study?

Species of large mammal	Number of responses*
Bison	27 (9%)
Black bear	61 (20%)
Elk	65 (21%)
Moose	57 (19%)
White-tail deer	70 (23%)
Other	24 (8%)

Notes :

\* Because each respondent could answer more than one species, the total number of responses (304) exceeds the total number of respondents (75).

### 5.3 Importance of Wildlife for Biosphere Reserve Enjoyment

Respondents were also asked a number of questions concerning their views on wildlife, such as whether or not they felt it was important to maintain an abundance of large mammals in the RMBR, if one of their purposes in owning land in the area included using the large mammals and the general effect encountering large mammals has on their visits to the area. The results of these questions is shown in Tables 5-8 - 5-10.

Table 5-8. - Importance of large mammal abundance.

How important is it to you that the abundance of the large mammal species of RMNP and surrounding area be maintained?

Very important	Fairly important	Of little importance	Of no importance	Don't know	Unknown
123 (61%)	55 (27%)	12 (6%)	5 (2%)	4 (2%)	4 (2%)

88% of respondents felt that it was very or fairly important to maintain the abundance of large mammals in the RMNP area. However, some respondents wrote comments such as "We would question the abundance of large mammals in some of the areas adjacent to RMNP... we hardly ever see any elk or moose, and very few deer. This year we have seen no bears at all."

Table 5-9. - Purpose in owning land near RMNP.

Does your primary (or secondary) purpose in owning land near RMNP and surrounding area include watching/photographing/studying the large mammal populations of the area?

Response	Permanent residents	Non-permanent residents	Total number of respondents
Yes	54 (40%)	21 (32%)	75 (37%)
No	78 (57%)	45 (67%)	123 (61%)
Unknown	4 (3%)	1 (1%)	5 (2%)

Table 5-10. - Effects of encountering large mammals.

In general, what effect did encountering large mammals have on your visits to RMNP and surrounding area?

Response	Number of responses
Increased enjoyment very much	50 (75%)
Increased enjoyment somewhat	11 (16%)
Made no difference	5 (7%)
Decreased enjoyment somewhat	0 (0%)
Decreased enjoyment very much	1 (2%)

91% of respondents indicated that encountering large mammals increased their enjoyment of the area: "It is a wonderful thing to see animals in a healthy normal state. When we travel in or through the park it seems as though we missed something if we do not see some of these animals as we drive." The 9% of respondents who said that encountering large mammals either made no difference to them or decreased their enjoyment of the area usually gave reasons such as crop depredation or "Seen them all so many times I don't care about them anymore" as reasons.

#### 5.4 Time Spent With Wildlife

Information was gathered from respondents concerning the amount of time they spent in the area over the year (1993) and the amount of time they went out to use the large mammals over the same time period. This information is contained in Tables 5-11 and 5-12.

Table 5-11. - Time spent in area.

How many days did you spend in the area over the past year (1993)?

	Permanent residents	Non-permanent residents
Number of days	8970	825
Number of respondents	47	20
Average number of days/respondent	191	41

Table 5-12. - Active time spent with the large mammals.

How many days did you go out to watch, photograph or study the large mammal populations of the area?

	Permanent residents	Non-permanent residents
Number of days	1815	275
Number of respondents	45	18
Average number of days/respondent	40	15

Many respondents commented that they see wildlife and large mammals on their farms regularly. As one respondent put it "I watch these animals from my sunroom window."

### 5.5 Willingness-to-pay for Wildlife

Respondents were asked to provide information as to how much money they would be willing to pay/year to ensure that the abundance of large mammals was maintained in the RMBR. The results of this question are contained in Table 5-13.

Table 5-13. - WTP for abundance of large mammals.

How much would you be willing to pay/year to ensure the abundance of large mammals is maintained in RMNP and surrounding area?

Willingness to pay/year (\$)	Number of responses	Total willingness to pay (\$)
0	24 (12%)	0 x 24 = 0
1 - 19	67 (33%)	10 x 67 = 670
20 - 49	32 (15.5%)	35 x 32 = 1120
50 - 99	14 (7%)	75 x 14 = 1050
100 - 199	10 (5%)	150 x 10 = 1500
200 - 299	4 (2%)	250 x 4 = 1000
300 - 399	2 (1%)	350 x 2 = 700
400 - 599	1 (.5%)	500 x 1 = 500
600 or more	4 (2%)	600 x 4 = 2400
No answer	45 (22%)	
Total	203 (100%)	8940

The average willingness-to-pay/respondent to maintain the abundance of large mammals is  $8940/158 = \$57$ .

As is shown in Table 5-13, 12% of respondents indicated that they would not be willing-to-pay to help ensure the abundance of large mammals is maintained in the RMNP area. Most of these respondents indicated that they

already pay enough in crop damages and taxes, or as two respondents put it "I consider lost crop as money donated to the cause" and "I pay taxes on the land, that's enough!". Other respondents supported the idea that "WTP nil, they (the animals) will survive on their own."

Respondents were subsequently asked questions concerning their expenditures for their activities in the RMBR area (Questions 9 and 10). These expenditures were recorded and hunting expenditures were factored out for those respondents (N = 13) that included both consumptive and non-consumptive expenditures. Table 5-14 displays the respondents' expenditures.

Table 5-14. - Non-consumptive expenditures.

How much did you spend to watch, photograph or study the large mammal populations of the area in 1993?

Category of expenditure	Total expenditures (\$)	Average expenditure/ permanent resident (\$)	Average expenditure/ non-permanent resident (\$)	Average expenditure/ respondent (\$)
Trans - portation	16 065	297 (35)	378 (15)	321 (50)
Accomm- odation	984	11 (24)	90 (8)	30 (32)
Food	6 190	65 (32)	274 (15)	132 (47)
Equipment	11 075	239 (30)	355 (11)	271 (41)
Other items	3 409	47 (28)	161 (13)	84 (41)
Total	37723	659	1258	838

Notes:

Number of responses (counts) differ for every column as not all respondents entered expenditures in all of the categories.

Following the questions regarding expenditures, respondents were asked if they would still have taken their trip to the RMNP area if their costs had been more, and how much more they would have spent before deciding not to take their trip to the RMNP area (thus revealing their level of consumer surplus). The results of these questions are contained in Tables 5-15 and 5-16.

Table 5-15. - Number of respondents that would still have come if their costs had been more.

Would you still have taken these trips if your costs had been more?

Response	Number of responses
Yes	51 (93%)
No	4 (7%)
Total	55 (100%)

Table 5-16. - Post-expenditure WTP.

How much more would you have spent before deciding not to take these trips in 1993?

Willingness to pay (\$)	Number of responses	Total WTP (\$)
0	2 (4%)	$0 \times 2 = 0$
1 - 19	6 (12%)	$10 \times 6 = 60$
20 - 49	5 (10%)	$35 \times 5 = 175$
50 - 99	8 (17%)	$75 \times 8 = 600$
100 - 199	8 (17%)	$150 \times 8 = 1200$
200 - 299	6 (12%)	$250 \times 6 = 1500$
300 - 399	0 (0%)	$350 \times 0 = 0$
400 - 599	4 (8%)	$500 \times 4 = 2000$
600 or more	10 (20%)	$600 \times 10 = 6000$
Total	49 (100%)	11 535

The average post-expenditure willingness-to-pay for 1993 is  $11535/49 = \$235$ . This means that on average, each resident surveyed was willing to pay in total an additional \$235 on top of their already incurred expenditures (average expenditure = \$838) for the chance to enjoy the large mammal populations of the RMBR (Figure 5-1). It is important to keep in mind the fact that residents do not only pay in cash (taxes and property costs) but often pay in forms such as crop damage and depredation, therefore it may be difficult for some residents to express their level of WTP. It is possible that some residents answered this question with the replacement value of wild meat with store-bought meat in mind.

96% of respondents indicated that they were willing-to-pay more to engage in non-consumptive wildlife-related activities. However, some respondents put conditions on their willingness-to-pay. Examples of this include "WTP provided that the main purpose was not for hunting. With the many hunting seasons now in existence it is next to impossible to go into the bush for recreational reasons." Still other respondents took the WTP question further, and asked, "Is it the intention of this survey to determine whether or not all concern for wildlife in Parks should be abandoned as too costly? What is the intention and who is the final recipient?"



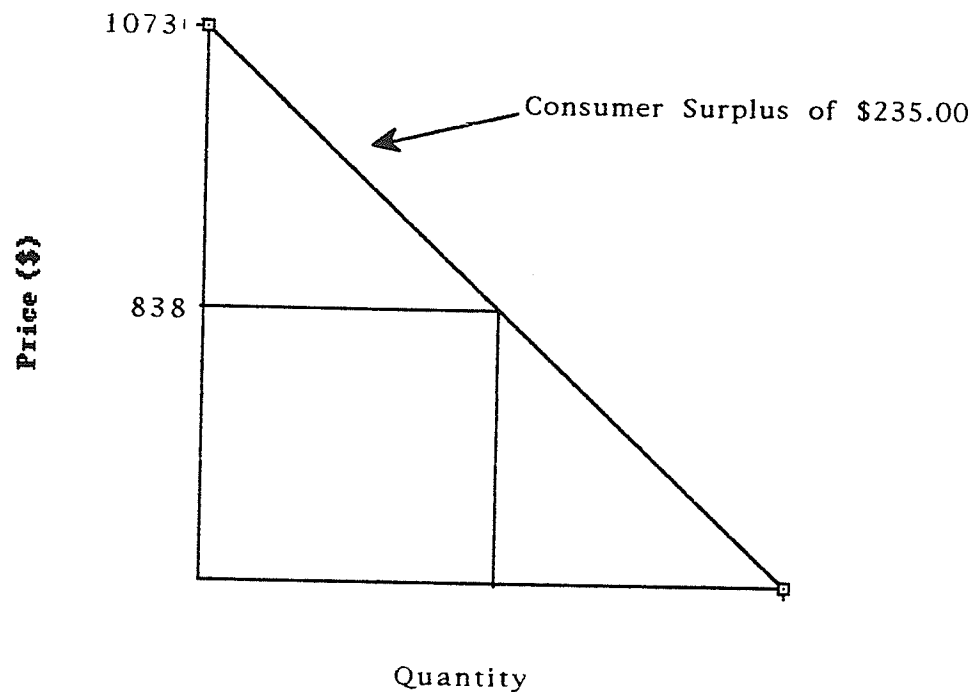


Figure 5-1. The average level of consumer surplus being enjoyed by Biosphere Reserve residents.

Figure 5-1 displays the average consumer surplus being enjoyed by area residents for their non-consumptive large mammal usage. The total average benefit being derived by Area residents is \$1073. However, the average expenditures being incurred by area residents is only \$838, thus resulting in an average consumer surplus of \$235 per area resident.

### 5.6 First Nations Results

The results of the survey could not be obtained from the First Nations target population due to difficulties the researcher had no control over.

## CHAPTER SIX

## DISCUSSION AND CONCLUSIONS

The RMNP area is known as a good place to encounter wildlife. Both visitors to RMNP and residents of the surrounding Biosphere Reserve take part in many consumptive and non-consumptive wildlife-related activities. These activities represent a significant outlay of both time and monetary expenditures for both Park visitors and area residents.

#### 6.1 Comparison of Various Activity Participation Rates

Figure 6-1 compares the Park visitors' "great interest" in watching, photographing, or studying/identifying large mammals with the area residents' "great interest" in watching, photographing, studying/identifying, hunting, and feeding large mammals. The Park visitors display a higher overall percentage of "great interest" for all three activities, possibly due to the fact that area residents see these animals frequently as they live and work in the area year-round whereas Park visitors may not have the opportunity to see these animals as frequently and thus consider it a 'treat' to view the animals.

The 1991 Survey found that only 29% (vs. roughly 40% on average in this study) of respondents expressed "great interest" in participating in direct non-consumptive wildlife-related activities. As well, roughly 7.4% (vs. 24% in this study) of the respondents expressed "great interest" in hunting (Filion et. al. 1993). These 1991 Survey numbers are considerably lower than those documented in this research project for the RMBR, yet the Manitoba average

for these two categories (direct non-consumptive uses and hunting) were found to be very near the Canadian averages. Perhaps these differences are due to the fact that the survey population of this study are largely rural residents who happen to live close to a national park known for its abundant wildlife populations, whereas in general the survey population of the 1991 Survey were drawn from the general population.

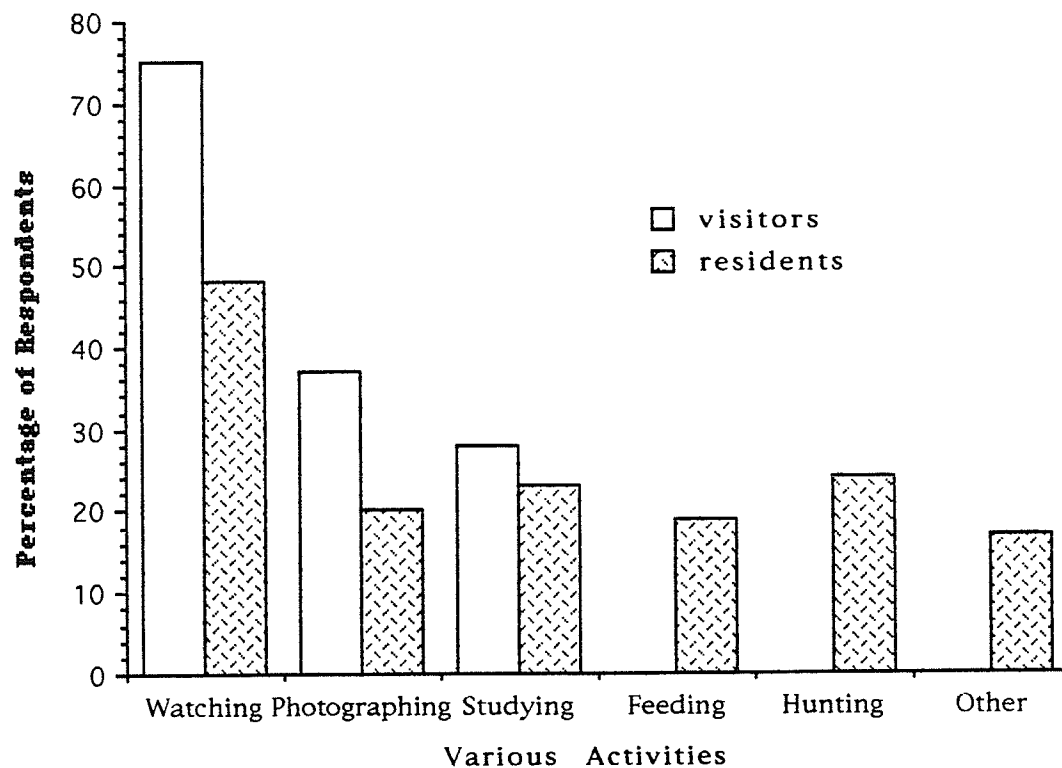


Figure 6-1. Comparison of the level of "great interest" for various activities.

### 6.2 Willingness-to-pay for Abundance Comparison

Figure 6-2 compares the willingness-to-pay/year of the two survey populations to ensure the abundance of large mammals is maintained in RMNP and surrounding area.

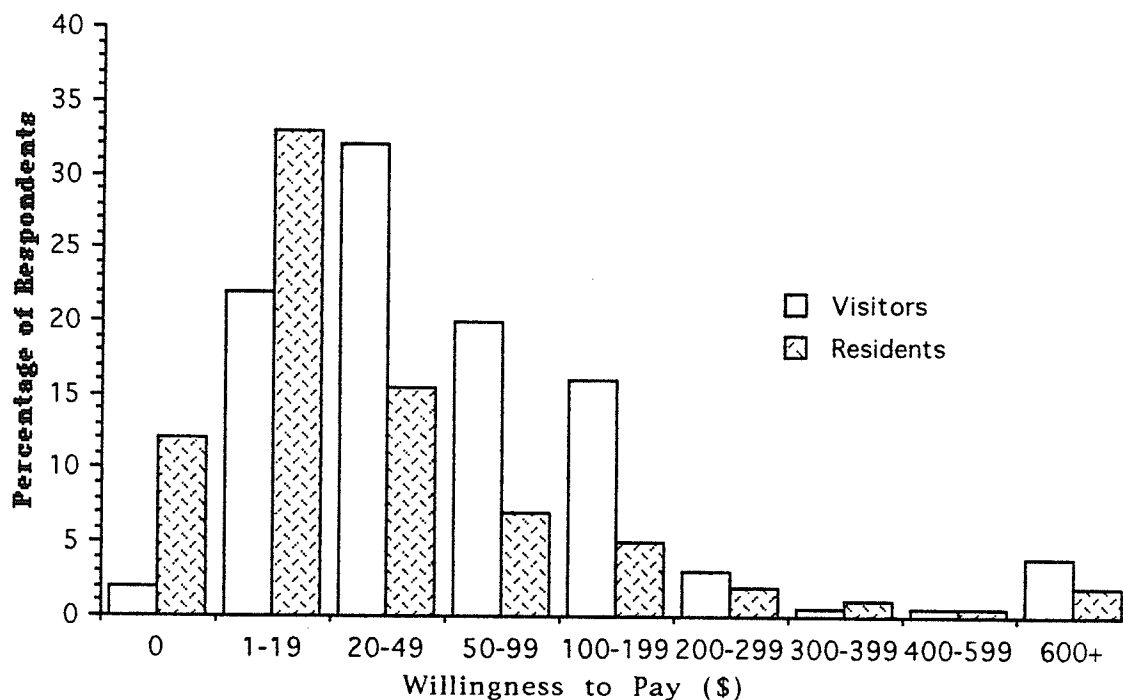


Figure 6-2. Willingness-to-pay for abundance of the two survey populations.

How much would you be willing to pay/year to ensure the abundance of large mammals is maintained in RMNP and surrounding area?

The area residents are generally willing-to-pay more than the Park visitors at the lower dollar amounts (\$0 - 19) and the Park visitors are generally willing-to-pay more at the higher dollar amounts (\$20 - 600+ with the exception of the \$300 - 399 category) to ensure the abundance of large mammals is maintained in the area. This may be due to the fact that area residents feel the animals should look after themselves or are less willing to help maintain abundant stocks of animals that depredate their crops. Perhaps Park visitors would be willing to pay more because they do not see the damage these animals can do to crops and fields, or possibly because they are less

familiar with wildlife and are therefore very interested when they do encounter wildlife.

### 6.3 Comparison of Purposes

Each of the survey populations was asked if one of their primary or secondary purposes in going to RMNP or owning land near RMNP and surrounding area included watching, photographing, or studying/identifying the large mammal populations of the area. The results of this question are displayed in Table 6-1, and in more detail in Table 6-2.

Table 6-1. - Comparison of purposes.

Is your primary or secondary purpose in coming to RMNP and surrounding area related to the large mammals?

<u>Survey Population</u>	<u>Response (%)</u>	
	<u>Yes</u>	<u>No</u>
Park Visitors	64	36
Residents	40	57
Non-residents	32	67

Note: The percentages may not add to 100% due to the fact that there were 5 mail-out surveys returned with this question left unanswered, thus leaving an Unknown category comprising 2% of the total mail-out survey population.

#### 6.3.1 Hunting Comparison

The mail-out survey to the permanent residents and non-permanent residents included the category of 'hunting' when asking about their interest

in participating in certain wildlife-related activities. Their answers are displayed in Table 6-2.

Table 6-2. Mail-out respondents' interest in hunting.

	<u>Interest in Hunting</u>			Total Response
	Great	Some	None	
Perm. Res.	29	25	67	121
Non-perm. Resident	16	9	38	63

Table 6-2 shows that 55% of the permanent residents and 60% of the non-permanent residents have no interest in hunting. This is not to say that hunting is not a valid and important activity in the area, just that less than half of the people in the area have an interest in hunting. However, interest in hunting by area residents and non-residents is significantly higher than the Canadian average of 7.4%.

The data from Table 6-2 was further analysed by checking interest in hunting against primary purpose for land ownership in the area (use of large mammals or not) to determine whether or not residents and non-residents of the area owned land in the area for hunting purposes. Contrary to the general perception of many, Table 6-3 shows that interest in hunting is not a main reason for land ownership in the RMBR, specifically among non-residents

landowners. However, this may not hold true for landowners adjacent to RMNP where large mammal populations are more prevalent.

Nevertheless, the value of hunting is important in the area. The interest in hunting expressed by permanent and non-permanent residents (45% and 40% respectively) is well above the Canadian hunting participation rate of 7.4%. As well, there are substantial expenditures on hunting-related activities such as licensing fees and equipment purchases that contribute to the local economy. Finally, other benefits are derived from hunting such as the sharing of meat from hunted animals.

Table 6-3. Number of respondents and their corresponding level of interest in hunting.

	Yes			No*		
	Great Interest in hunting	Some Interest in hunting	No Interest in hunting	Great Interest in hunting	Some Interest in hunting	No Interest in hunting
Perm. Residents	12	9	28	17	17	38
Non-perm. Residents	7	5	7	9	4	31

Notes:

\* The "Yes" and "No" headings are in response to the question asking respondents if their primary purpose in owning land near RMNP included using the large mammal species.

#### 6.4 Comparison of Species Watched, Photographed and Studied

The percentages of the survey populations who watched, photographed, or studied black bear, elk, and moose are very close in each of the two survey groups (all within 5% of each other). However, the percentage of Park visitors (23%) who watched, photographed, or studied bison was much higher than that of the area residents (9%). The bison herd is a captive herd, which means Park visitors may think they are somewhat guaranteed to see wildlife and thus consider this a "treat" and would thus be willing to visit the compound more readily than permanent residents who see wildlife more often. Or perhaps the captivity of the herd diminishes the viewing attraction for the permanent residents. As well, the percentage of area residents who watched, photographed, or studied white-tail deer (23%) was much higher than that of Park visitors (12%). The percentage of residents who encountered white-tail deer is higher than that of Park visitors, possibly because RMNP does not provide the proper habitat conditions for the deer whereas the surrounding farmland may provide a better habitat for the deer. As well, residents may take a special interest in deer because there is not a draw system to allocate deer hunting licenses as there is for elk and moose; consequently deer licenses are easier to obtain than elk or moose licenses.

##### 6.4.1 Species Observed by First Nations Residents of the RMBR

Although it was not possible to collect survey data from the First Nations residents of the RMBR, some information was collected from through conversations with members of the Keeseekoowenin First Nation. First Nations residents participate in a considerable amount of non-consumptive wildlife-related activities, in particular watching the captive bison herd in RMNP



(Chief Harry Bone, pers. comm.). Many First Nations people go to the bison compound quite regularly just to see and walk with the bison, possibly as an act of communing with their animal brothers (Marvin Blackbird and Brion Whitford, pers. comm.). They may also go there to pay reverence to the animal which provided sustenance for their ancestors. The frequent visitation to the bison compound for non-consumptive purposes by the First Nations residents of the area was confirmed by RMNP officials who observed that First Nations visitors account for a significant percentage of the visitations, especially in the winter months (Pat Rousseau, pers. comm.).

#### 6.5. Importance of Abundance Comparison

The importance of maintaining abundant wildlife populations can be compared between the 1991 Survey and this study. The results show higher numbers for the 'very important' category (84% vs. 63%) for Park visitors, as compared to the Canadian average. In the case of area residents, the percentage in the 'very important' category (61% vs. 63%) and 'fairly important' category (27% vs. 23%) were similar to the Canadian average.

#### 6.6 Post-Expenditure Willingness-to-pay Comparison

Figure 6-3 compares the post-expenditure willingness-to-pay of the two survey populations. The survey question that this histogram is derived from is the second last question on the survey and basically asks respondents to look at all the money they have spent thus far to watch, photograph, or study the large mammal populations of the RMBR and determine how much more money in total they would have spent before deciding not to take their trips to RMNP and surrounding area to enjoy these activities. The post-expenditure

willingness-to-pay of Park visitors is higher than that of area residents for the \$20 - 199 range whereas the WTP of area residents is higher for all other categories, except for the \$300 - 399 range. There are some area residents willing-to-pay very little (\$0 - 19), possibly because they are not wildlife enthusiasts or they feel they already pay enough in taxes, damages, depredation, etc. There are also some area residents willing-to-pay large sums of money (\$400 - 600+) to non-consumptively use the animals, indicating that there is a group of in the area willing to incur great expenditures to use the animals. It is also possible that some residents answered this question with the replacement value of wild meat with store-bought meat in mind.

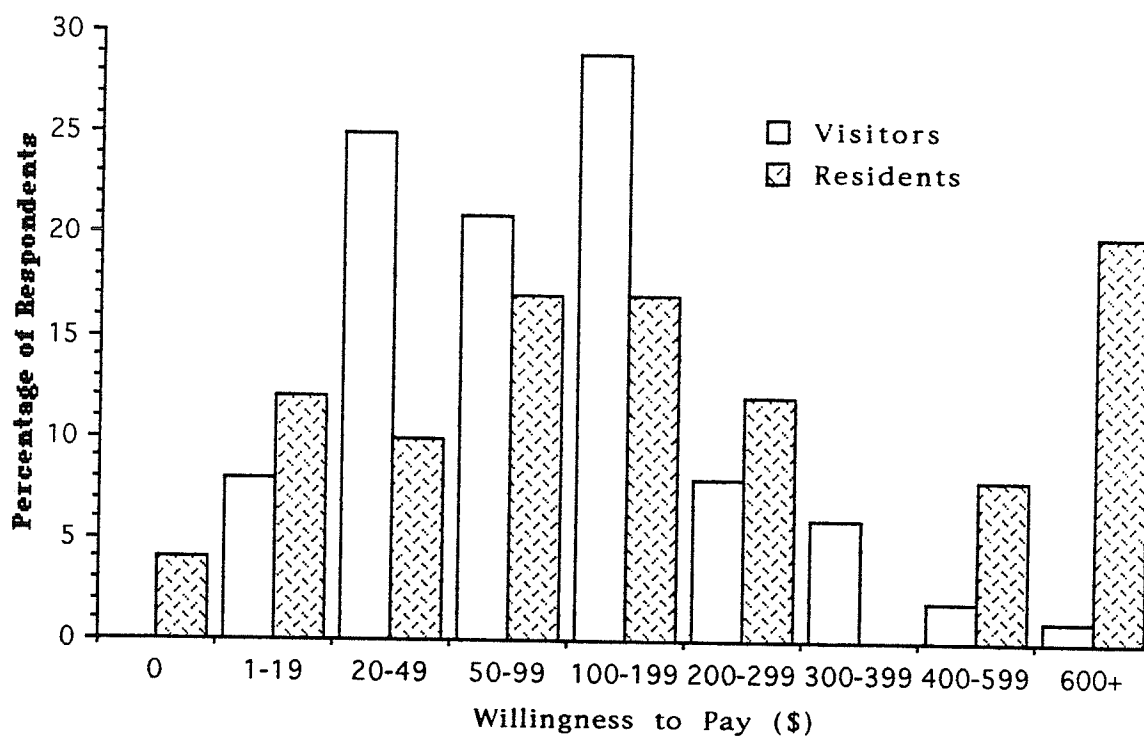


Figure 6-3. Post-expenditure willingness-to-pay of the two survey populations.

How much more would you have spent before deciding not to take these trips in 1993?

The percentage of respondents who were willing-to-pay more money for wildlife-related activities was in excess of 90% for both survey populations. However, in the 1991 National Survey it was determined that only 60.4% of the general population that was surveyed were willing-to-pay more money in excess of their present expenditures for wildlife-related activities. Perhaps the discrepancy in the numbers could be attributable to the fact that the present study focused on an area known to possess abundant stocks of wildlife, thus endearing respondents to the area and thus influencing their level of WTP. The residents and visitors to the RMNP area may be willing-to-pay more than the Canadian average because of the uniqueness and beauty of the area.

The willingness-to-pay and consumer surplus displayed in Figure 6-3 reveal that there is a considerable amount of enjoyment being derived from the large mammals of the RMBR by both Park visitors and area residents. There seems to be a large demand for non-consumptive wildlife-related activity for these species, only part of which is being paid for in the marketplace.

#### 6.7 Comparison of Expenditures

Table 6-4 compares the expenditures of the survey populations on a per day basis. Analysis of Table 6-4 shows that Permanent Residents incurred less expenditures than the other two target populations in all categories of expenditures. This is probably due to the fact that Permanent Residents live in the area and encounter wildlife more often than the other two in their everyday lives and thus make less of an effort to actively engage in non-consumptive uses of the animals.

Table 6-4. Comparison of expenditures on a per day basis (\$/day).

	Trans- portation	Accomm- odation	Food	Equip- ment	Other	Total
Park Vis	11	11	18	37	4	81
Perm Res	7	.28	1.6	6	1	16
Non- perm Res	25	6	18	24	11	84

Notes :

Park visitors per day expenditures were calculated by dividing the average expenditure/respondent/visit by the average length of stay at the Park (4.5 days).

Permanent residents per day expenditures were calculated by dividing the average expenditure/respondent/year by the average number of days spent with wildlife over the last year (40 days).

Non-permanent residents per day expenditures were calculated by dividing the average expenditure/respondent/year by the average number of days spent with wildlife over the last year (15 days).

Although expenditures in the 'equipment' category may seem high compared to the rest of the categories, the 1991 Survey found that 43.9% of expenditures for primary non-consumptive wildlife-related activities were for the purchase of equipment.

6.8 Comparison of Total Expenditures

The total population of the RMBR can be estimated from the voters lists, which contain the names of all residents 18 years or older. It can be estimated that there are approximately 13000 rural permanent residents and 2100 non-permanent residents 18 years or older in the RMBR. These population estimates

do not include people living in towns or cities in the RMBR, only the people living in the rural areas.

These population estimates can be used to develop expenditure estimates for the non-consumptive wildlife-related activities. These are calculated as:

Total rural pop. perm. res.(13 000) X average expenditure (\$659) = \$8 567 000

Total rural pop. non-perm. res.(2100) X average expenditure(\$1258) =\$2 641 800

RMNP visitation for 1993 (800 000) X average expenditure (\$365) = \$292 000 000

These numbers indicate that the total expenditures of Park visitors for non-consumptive wildlife-related activities far exceed that of residents. Among the residents, permanent residents spend over three times as much as non-permanent residents. The economics of consumptive activities (hunting) was outside the scope of the present study but it should be noted that among both permanent and non-permanent residents, slightly less than half have any interest in hunting (Section 6.3.1).

#### 6.9 Comparison of RMBR and the Canadian Averages

When the results of this research project are compared to the results of the National Surveys on the Importance of Wildlife to Canadians, some interesting facts emerge (Table 6-5).

Table 6-5. A comparison of non-consumptive expenditures.

	<u>Non-consumptive Expenditures (\$)</u>		
	Per Day	Number of Days	Per Year
Canadian Average	28	22	619*
RMNP Visitors	81	14	1132**
Perm. Res.	16	40	659
Non-perm. Res.	84	15	1258

Notes :

\* The Canadian averages are for primary non-consumptive trips or outings only (Filion et. al. 1993).

\*\* RMNP visitors is calculated by average expenditure/trip(\$365) X average number of trips taken/year(3.1)

The Canadian average per year expenditures are lower than those documented in this study for Park visitors and non-permanent residents of the area and almost identical to that of area residents. This may be due to the uniqueness of the Park itself as it is able to draw visitors from both near and far. As well, this may be due to the fact that RMNP provides a multitude of opportunities for its users, each of which is associated with a level of costs or expenditures. There is so much to do in the area, it is not hard for the average visitor or resident to spend a significant amount of time and money on wildlife-related activities.

### 6.10 Conclusions and Recommendations

Large mammals are an important resource to the RMBR, with important economic and societal benefits. Interest in watching these animals is expressed by over 90% of both survey populations, and interest in photographing is expressed by 77% of Park visitors and 65% of area residents.

Considerable expenditures on the non-consumptive uses of the large mammal species of the RMBR are made by both Park visitors and area residents. Also, considerable benefits are being enjoyed, not all of which are paid for in the marketplace, thus leading to an enjoyment of consumer surplus by both Park visitors and area residents. Park visitors are enjoying an average consumer surplus of \$122 for the large mammal species of the RMBR and area residents are enjoying an average consumer surplus of \$235 for the large mammal species of the RMBR.

High value and demand exist for the non-consumptive uses of the wildlife. With the exception of the National Park, much resource planning for large mammal species regard their value as "big game" animals. Yet, the results of the present report show that the economic activity generated by non-consumptive uses is very large. Although the present project did not focus on the economics of hunting, it is clear that both the total value and the number of people involved in non-consumptive uses of large mammal species in the RMBR far exceed consumptive uses.

For proper sustainable development planning, economic as well as environmental and social values need to be taken into account. The value of hunting is no doubt significant; however, the value of non-consumptive uses almost seems to be ignored. If sustainable development is the objective, all of these values should be considered.

Less than 50% of non-resident landowners in the sample own land in the RMBR for hunting purposes. However interest in hunting among this survey population is much higher than the national average.

There are four general conclusions, and there are recommendations associated with each.

(1) Unfulfilled Demand for Non-consumptive Uses

The large levels of WTP and consumer surplus imply that there is a certain degree of unfulfilled demand occurring in RMNP with regards to non-consumptive large mammal usage. The Park authorities could capitalize on this unfulfilled demand through the implementation of programs catering to this unfulfilled demand. Seeing as the majority of wildlife viewing takes place while driving through the Park in an automobile (ie. pleasure driving), perhaps the Park authorities could develop programs to get these people out of their vehicles and open up new opportunities for Park visitors to view/photograph the wildlife. For example, more animal watch-towers with interpretive/educational programs may prove useful. Activities such as horseback riding tours and guided overnight backcountry camping trips would very easily facilitate the unfulfilled demand for both watching and photographing wildlife. This, coupled with a complete in-Park photographic services facility (ie. camera rentals, film sales, film processing, etc.) and the average Park visitor would have a readily reliable means of filling his/her unfulfilled demand.

The information provided by the present project could be used for the planning of interpretive programs and events, possibly educational in focus. As well, this information may also prove useful in Park planning and management of backcountry use patterns, trail location, and visitor services.



## (2) Eco-tourism in RMNP

The results of this project could be used as the foundation for a regionally based eco-tourism plan, perhaps focusing on the international eco-tourist. This would involve RMNP, the First Nations people of the area and local residents. Clearly, this project shows that there are significant expenditures related to non-consumptive large mammal recreational uses in the RMNP area and a large untapped market (consumer surplus) for these activities.

With the economic realities of the present day and the new direction being taken by Parks Canada, it would be very advantageous for the Park authorities, Provincial agencies, RMBR Management Committee and the area residents to work together in a meaningful way to develop an eco-tourism plan that can bring additional benefits to the area and to Manitoba.

## (3) Eco-tourism in the RMBR

Opportunities exist outside of the Park for eco-tourism related activities. The high probability of seeing large mammals makes the area surrounding the Park extremely attractive for naturalists and other visitors. Thus, opportunity exists for private landowners around the Park to transform some of their land into an area where animals will congregate and thus attract interested wildlife viewers and photographers.

## (4) Information Gaps and Research Needs

The findings of this research project bring up a number of new questions. Further willingness-to-pay studies should be conducted to identify other areas where levels of consumer surplus exist. Further study should be conducted to determine the present non-consumptive wildlife uses,

expenditures and levels of willingness-to-pay of the First Nations people of the area . The First Nations people are an important part of the RMBR and should be involved as an essential part of tourism and economic development planning. Further study and analysis should be performed to see what level of demand actually exists among Park visitors for backcountry experiences, and how they (the visitors) think this demand could be fulfilled.

The last two appendices of this document provide feedback to the RMNP staff, as they contain comments from Park visitors and area residents. This may help identify contentious issues and improve relations between the Park, its visitors and area residents.

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#### LIST OF PERSONAL COMMUNICATIONS

- Chief Harry Bone, Keeseekoowenin First Nation.
- Marvin Blackbird, Keeseekoowenin First Nation Band Council.
- Brion Whitford, Keeseekoowenin First Nation.

## Appendix 1

## Definition of Terms

Consumer surplus : The consumer surplus represents the amount of money participants would pay over and above what they have actually paid rather than to forego a given experience.

Consumptive activity : Consumptive activity is defined as an activity whose purpose is the harvesting of wildlife.

Day : A day is defined as any part of a day (24 hours) spent participating in a given wildlife-related activity.

Direct non-consumptive activity : Direct non-consumptive activity is defined as a non-consumptive activity that involves an actual encounter with wildlife. Residential wildlife-related activities, primary non-consumptive trips or outings, and incidental wildlife encounters during trips or outings are included in this category.

Expenditures : Expenditures is defined as expenses incurred by the participants for the purchase of goods and services to be used primarily for participation in a wildlife-related activity. Goods bought for other purposes but used in wildlife-related activities are not considered to be legitimate costs of wildlife-related activities. Expenditures are divided into the following categories:

**Expenditures on natural areas** : Acceptable costs include the maintenance, improvement, or purchase of natural areas. An example of improvement or provision of a natural area for wildlife would be to maintain or add to an area certain types of plants for the purpose of

feeding or sheltering wildlife. The respondent could not include, for example, his/her cottage.

**Expenditures on residential activities :** Such items as the cost of feeders, feed for wildlife, birdhouses, magazines, films, and cameras used primarily for wildlife would be included.

**Expenditures on transportation :** Such items as the operation of private vehicles, gas, oil, car repairs, car rentals, planes, and ferries would be included.

**Expenditures on accommodation :** Such items as cabins, lodges, motels, and campgrounds would be included.

**Expenditures on food :** Such items as groceries, meals, and beverages would be included.

**Expenditures on equipment :** Such items as cameras, camping gear, binoculars, special clothing, recording equipment, boats, motors, and other vehicles, such as snowmobiles and multiple-terrain vehicles, would be included. For consumptive activity, such purchases as guns and accessories, game carriers, calls, dogs, and decoys for hunting, and rods and reels for fishing, would be included.

**Expenditures on other items :** Such items as feed for wildlife, books, and film and film processing would be included, as well as ammunition, bait, guide fees, dog maintenance, and equipment rentals and repairs for consumptive activity.

**Incidental wildlife encounter during trip or outing :** Incidental wildlife encounter during trip or outing is defined as observing wildlife on a journey whose main purpose was other than encountering wildlife.

**Indirect wildlife-related activity :** Indirect wildlife-related activity is defined as an activity that allows the participant to experience wildlife indirectly through a variety of modes, such as reading, watching films or



television, and purchasing arts or crafts, or by visiting institutions dealing with wildlife, such as zoos, game farms, aquariums, or natural history museums.

Large mammals : Large mammals is defined as big game and non-game species, such as bison, black bear, elk, moose, and white-tailed deer.

Natural area : Natural area is defined to include areas such as woodlot, hedge, marsh, open field, national park, or similar natural area that provides food or shelter for wildlife.

Non-consumptive activity : Non-consumptive activity is defined as an activity that does not involve the harvesting of wildlife, such as watching, photographing, feeding, or studying wildlife around the home or cottage or during trips or outings. Indirect wildlife-related activities and direct non-consumptive activities are included in this category.

Primary non-consumptive trip or outing : Primary non-consumptive trip or outing is defined as a trip or outing taken for the primary purpose of encountering wildlife to watch, photograph, feed, or study them.

Residential wildlife-related activity : Residential wildlife-related activity is defined as an activity that takes place around the home or cottage. Such activities as watching, photographing, feeding, or studying wildlife or maintaining shrubs, plants, or birdhouses for wildlife around the home or cottage are included.

Sustainable development : Sustainable development is defined as development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

Trip or outing : A trip is defined as a journey away from the place of residence for more than 1 day, and an outing is defined as a journey away from the place of residence for less than 1 day.

Wildlife : Wildlife is defined as wild birds and other wild animals, not pets or other domesticated animals. It includes waterfowl, other birds, small and large mammals, and other wildlife in a natural environment.

Wildlife-related activity : Wildlife-related activity is defined as a recreational activity that includes, in some form, either direct or indirect contact with wildlife. Hunting, indirect wildlife-related activities, residential wildlife-related activities, primary non-consumptive trips or outings, and incidental wildlife encounters on trips or outings are included in this category.

Wildlife organization : Wildlife organization is defined to include organizations such as naturalist and conservation organizations and sportsmen's clubs.

Source : Filion et. al., 1983, 1989, and 1993.

Appendix 2

Park Visitors Survey Questionnaire

SURVEY ON THE IMPORTANCE OF LARGE MAMMALS IN  
RIDING MOUNTAIN NATIONAL PARK AND  
SURROUNDING BIOSPHERE RESERVE

95

Thank you for taking a few minutes to answer these important questions on the value of wildlife. Your answers will provide valuable insights into both the economic value of wildlife as well as the enjoyment visitors derive from wildlife and wildlife related activities in Riding Mountain National Park and surrounding area. This survey is being conducted by an independent university-based researcher. Your responses are strictly confidential.

PLEASE READ THESE IMPORTANT DEFINITIONS

**WILDLIFE:** Means a vertebrate animal of any species or type that is wild by nature, but does not include pets or other domesticated animals, game farm animals or animals found in zoos.

**LARGE MAMMALS:** For the purpose of this survey refers only to black bear, elk, moose, white-tailed deer, and bison.

1. For each activity listed below, check the category that best describes your interest in participating. (If you have participated in any of these activities, please indicate your interest in continuing to take part in the activity) 96

	Great interest in participating	Some interest in participating	No interest in participating
Watching large mammals	0	0	0
Photographing large mammals	0	0	0
Studying/identifying large mammals	0	0	0

2. Presently, most types of large mammals in Riding Mountain National Park and surrounding area are abundant. How important is it to you that this abundance be maintained?

Very important	Fairly important	Of little importance	Of no importance	Don't know
0	0	0	0	0

3. How much would you be willing to pay/year to ensure the abundance of large mammals is maintained in Riding Mountain National Park and surrounding area?

- |              |                       |                |                       |
|--------------|-----------------------|----------------|-----------------------|
| \$ 1 - 19    | <input type="radio"/> | \$ 200 - 299   | <input type="radio"/> |
| \$ 20 - 49   | <input type="radio"/> | \$ 300 - 399   | <input type="radio"/> |
| \$ 50 - 99   | <input type="radio"/> | \$ 400 - 599   | <input type="radio"/> |
| \$ 100 - 199 | <input type="radio"/> | \$ 600 or more | <input type="radio"/> |

4. Does your primary (or secondary) purpose in coming to Riding Mountain National Park and surrounding area include watching/photographing/studying the large mammal populations of the area?

Yes



No



End of interview

5. During these outings or trips, in which of the following activities did you participate? (Mark all that apply)

- Watching large mammals
- Photographing large mammals
- Studying/identifying large mammals
- Other (specify)

6. Which of the following did you watch, photograph or study? (Mark all that apply)

- |            |                       |                     |                       |
|------------|-----------------------|---------------------|-----------------------|
| Bison      | <input type="radio"/> | Moose               | <input type="radio"/> |
| Black bear | <input type="radio"/> | White - tailed deer | <input type="radio"/> |
| Elk        | <input type="radio"/> | Other (specify)     | <input type="radio"/> |

7. In this outing to Riding Mountain National Park and surrounding area, how many days have you spent on this trip? \_\_\_\_\_ 98 Is this:

half of the  
normal average

average

twice the  
normal average

8. How many trips did you take over the past year (1993)? \_\_\_\_\_

9. In this outing to Riding Mountain National Park and surrounding area, how much did you spend to watch, photograph, or study the large mammal populations? (Enter expenditures in the space beside the categories that apply.)

Transportation (include costs to operate private vehicles, gas, oil, repairs, rentals, planes, trains, buses.) \_\_\_\_\_

Accommodation (include campgrounds lodges, motels.) \_\_\_\_\_

Food (include groceries, beverages, restaurant meals.) \_\_\_\_\_

Equipment used primarily for these activities (include cameras, binoculars, camping gear, special clothing, recording equipment, boats & motors and other vehicles.) \_\_\_\_\_

Other items (include film and photographic services, equipment rentals and repairs, batteries, etc.) \_\_\_\_\_

10. If you took more than one trip, was this an average cost?

Yes

No  \_\_\_\_\_

If no, specify what portion of average (ex. half of average, twice as much as average, etc.)

11. Would you still have taken these trips or outings if your costs had been more? 99

Yes

No

12. How much more would you have spent before deciding not to take these trips or outings in 1993?

\$ 1 - 19

\$ 20 - 49

\$ 50 - 99

\$ 100 - 199

\$ 200 - 299

\$ 300 - 399

\$ 400 - 599

\$ 600 or more

13. In general, what effect did encountering large mammals have on your visits to Riding Mountain National Park and surrounding area?

Increased enjoyment very much

Increased enjoyment somewhat

Made no difference

Decreased enjoyment somewhat

Decreased enjoyment very much

Thank you for your co-operation and taking the time to complete this survey. Any additional comments you may have may be written down in the space provided or on the back of the final sheet of paper.



Appendix 3

Area Residents' and Non-residents' Mail-out Survey Questionnaire



1. For each activity listed below, check the category that best describes your interest in participating. (If you have participated in any of these activities, please indicate your interest in continuing to take part in the activity) 102

	Great interest in participating	Some interest in participating	No interest in participating
Watching large mammals	0	0	0
Photographing large mammals	0	0	0
Studying/identifying large mammals	0	0	0
<u>OTHER</u>			
Feeding large mammals	0	0	0
Hunting large mammals	0	0	0
Other (specify)	0	0	0

2. Presently, most types of large mammals in Riding Mountain National Park and surrounding area are abundant. How important is it to you that this abundance be maintained?

Very important	Fairly important	Of little importance	Of no importance	Don't know
0	0	0	0	0

3. How much would you be willing to pay/year to ensure the abundance of large mammals is maintained in Riding Mountain National Park and surrounding area? 103

- |              |                       |                |                       |
|--------------|-----------------------|----------------|-----------------------|
| \$ 1 - 19    | <input type="radio"/> | \$ 200 - 299   | <input type="radio"/> |
| \$ 20 - 49   | <input type="radio"/> | \$ 300 - 399   | <input type="radio"/> |
| \$ 50 - 99   | <input type="radio"/> | \$ 400 - 599   | <input type="radio"/> |
| \$ 100 - 199 | <input type="radio"/> | \$ 600 or more | <input type="radio"/> |

4. Does your primary (or secondary) purpose in owning land by Riding Mountain National Park and surrounding area include watching/photographing/studying the large mammal populations of the area?

Yes



No



End of questionnaire

5. In which of the following activities did you participate? (Mark all that apply)

- Watching large mammals
- Photographing large mammals
- Studying/identifying large mammals
- Other (specify)

6. Which of the following did you watch, photograph or study? (Mark all that apply)

- |            |                       |                     |                       |
|------------|-----------------------|---------------------|-----------------------|
| Bison      | <input type="radio"/> | Moose               | <input type="radio"/> |
| Black bear | <input type="radio"/> | White - tailed deer | <input type="radio"/> |
| Elk        | <input type="radio"/> | Other (specify)     | <input type="radio"/> |

7. About how many days did you spend in the area over the past year (1993)? \_\_\_\_\_

8. About how many days did you go out to watch, photograph, or study the large mammals of the area? \_\_\_\_\_

9. How much did you spend to watch, photograph, or study the large mammal populations? (Enter expenditures in the space beside the categories that apply.)

Transportation (include costs to operate private vehicles, gas, oil, repairs, rentals, planes, trains, buses.) \_\_\_\_\_

Accommodation (include campgrounds, lodges, motels.) \_\_\_\_\_

Food (include groceries, beverages, restaurant meals.) \_\_\_\_\_

Equipment used primarily for these activities (include cameras, binoculars, camping gear, special clothing, recording equipment, boats & motors and other vehicles.) \_\_\_\_\_

Other items (include film and photographic services, equipment rentals and repairs, batteries, etc.) \_\_\_\_\_

10. If your above expenditures include hunting, please indicate the percentage of total expenditures for non-consumptive uses only.

25%

50%

75%

11. Would you still have taken these trips or outings if your costs had been more? 105

Yes

No

12. How much more would you have spent before deciding not to take these trips or outings in 1993?

\$ 1 - 19

\$ 20 - 49

\$ 50 - 99

\$ 100 - 199

\$ 200 - 299

\$ 300 - 399

\$ 400 - 599

\$ 600 or more

13. In general, what effect did encountering large mammals have on your visits to Riding Mountain National Park and surrounding area?

Increased enjoyment very much

Increased enjoyment somewhat

Made no difference

Decreased enjoyment somewhat

Decreased enjoyment very much

Thank you for your co-operation and taking the time to complete this survey. Any additional comments you may have may be written down in the space provided or on the back of the final sheet of paper.

Appendix 4

Keeseekoowenin Interview Guide

INTERVIEW GUIDE (NOT QUESTIONNAIRE) FOR KEESEEKOOWENIN <sup>107</sup>  
FIRST NATION BAND MEMBERS

1. Do you do any watching or photographing of the large mammal species of the Riding Mountain area?
  
  
  
  
  
  
  
  
  
  
2. How important is it to you to maintain healthy numbers of these animals?
  
  
  
  
  
  
  
  
  
  
3. Please describe the value of these animals to you.
  
  
  
  
  
  
  
  
  
  
4. Do you ever make special trips to RMNP to see the animals? If yes, how often?
  
  
  
  
  
  
  
  
  
  
5. How do you make these trips?
  - by household?
  - by group of people?
  - who pays the expenses?
  - any youth cook-outs?
  
  
  
  
  
  
  
  
  
  
6. If you had to travel further or if costs were more would you still go?



## Appendix 5

## Written Comments From Park Visitors

Wasagaming Campground Visitors' Comments :

- Wildlife makes the Park. I drive in from Dauphin almost every weekend.
- We come from Alberta for 2 weeks every summer. Love wildlife and is good for the kids to see wildlife.
- Local farmers so see wildlife every day.
- We like scenery more than animals.
- Large mammals as a resource are almost obsolete. In North Dakota people come from hundreds of miles to see the bison. I suggest you treasure your resource and keep them wild. I was absolutely fascinated with all I saw and will definately come back!!
- Animals make the Park a special place to visit and thus should be cherished.
- Willing-to-pay nothing. Should be covered by my taxes.
- Wildlife is not a purpose, merely a bonus.
- Park should implement a non-resident entrance fee.
- Never get to see a moose in Winnipeg!!!
- I like scenery as well as animals.
- Animals are a bonus to the whole Park package.

Lake Audy Campground Visitors' Comments

- Love coming for day trips with my family.
- I like bird-watching in the Park.

Moon Lake Campground Visitors' Comments

- Willing-to-pay nothing.
- Animals make the trips worthwhile.

Whirlpool Lake Campground Visitors' Comments

- We drive through the Park at least 20 times a year.
- We come for relaxation but animals are an added bonus.

Comments from cabin owners within the Park

- I've seen the animals so many times it's no big deal anymore. More interested in fishing.
- Need more focus on watersports programs.
- I see them on the farm all the time (x6).
- Prefer to waterski.
- Been coming so long I seen them decades ago so no longer a big deal.
- Important resource but seen them all years ago.
- Love the area and the wildlife.
- Park should do something about the fish in the lake, there's none!!!

Grey Owl Estates Residents' Comments

- Want watersports and relaxation. See animals on the farm all the time.
- Restock the damn lakes.
- Would pay to put fish in the lake but not for mammal maintenance.
- Would like to see better fishing.

Sportsman's Park Residents Comments

- I've seen them on the farm for 60 years and don't care to see them anymore.
- Drive to the bison compound 5 times a year.

\* These are the written comments as they appeared on the surveys. They have not been corrected for spelling or grammatical mistakes as to not in any way influence the interpretation of the comments.

## Appendix 6

## Written Comments From the Area Residents and Non-permanent Residents

Grandview - Permanent Residents

- Do alot of horse back riding if weather permits; enjoy watching and studying animals very much especially in the elk rut. (male, over 56 years)
- I watch these animals from my sunroom window. We live 7 miles from the Park but do not visit the Park to watch the animals. (male, over 56 years)
- Money from purchasing licenses should be put toward purchasing feed for deer, etc. Better control should be taken to protect private property, hunters from long distances (distant towns) tramp through property, yards, without permission. A road should be built through the Park so people could travel through the Park from Grandview to Rossburn area, more nature could be viewed. (female, 41-55 years)
- Dear sir, I am a seventy-eight year old widow who happens to live in the Grandview area. I would love to watch large mammals but do not have the opportunity. I am concerned about the reports of black-bear baiting around the Park. That this sort of thing is allowed is beyond belief. Many people in this area are also concerned. What can we do to have this atrocity stopped? (female, over 56 years)
- If the beaver were live trapped in the Riding Mountain there is lots of feed for moose, elk, and deer. The beaver have flooded good meadows and elk are moving out to farm land. If something is not done to let trappers in the Riding Mountain to trap off beaver, they are going to ruin the elk population and the bush. It is ridiculace what is happening and is costing a lot. I would not pay

anything. Get the government to spend the money they pay municipalities for beaver damages, pay trappers to trap beaver, and elk, moose, and deer would thrive. You've got to have hip waders to get into the Park.

If the government people would try and walk into the Riding Mountain to look at moose, elk, deer, and bear they would not go. They ride a plane and look down on them. Until you try and walk in the area yourself you would not believe the damage the beaver have done to the Riding Mountain. They have flooded all the big meadows and feed areas that elk and deer used to graze on, now the elk, moose, and deer have moved out to farmland.

It is very sad the way the government has managed it. They have got to let trappers in that Park and drop the beaver population by 50% to 75% of what it is right now. If they don't there won't be elk, deer, or moose in the Park in a few more years. It would not cost them as much as it is costing them now. They pay municipality's for beaver troubles and farmers next to the park for flooding fields and road washouts, blocked culverts in the roads, etc. Use that money and let or hire registered trappers in and trap down the beaver population. The land they have flooded will automatically grow back to grasses and shrubs. Even if they dug out or blow dams out after beaver are trapped down to the desired number. To let water run down the creeks. I don't say kill all the beaver, I say have it so the population is balanced like it used to be. If a beaver count was carried out, no one would believe how many thousand that there are.

If the government don't do something with the beaver, you mark my word, there won't be any elk in that park. They will be out on farmland and that will be another expense they will be paying farmers for crop damages,

bale damages and it will get worse before it gets better. Thank you. (male, 26-40 years)

- When driving in the area, we like to stop and watch the animals, and take pictures out of car window when safe to stop. Park should set up new guidelines in the area - strict enforcement of law, more range patrol. RMNP is a habitat for wild animals and should be kept as such. Even seniors should have to pay a fee to travel through the Park. (female, over 56 years)

- I feel that the revenue from hunting licenses should go to maintaining the abundance on large mammals in the area. (female, over 56 years)

- Need road between Grandview and Rossburn. (unknown gender, over 56 years)

- Wildlife must be protected. Ski-doo's and ATV's should not be allowed for use by hunters. (female, 41-55)

- Although my primary interest in land around the park is for farming purposes, it is a wonderful thing to see these animals in a healthy normal state. When we travel in or through the Park it seems as though we missed something if we do not see some of these animals as we drive. A point of great concern to me is hunting and poaching, especially in Duck Mountain where large numbers of animals are taken at one time. These groups of people often sell this meat and in some instances have been proven to take only the hind quarters and leave the rest. I realize this is a complicated matter, but I feel something has to be done about it. If possible could you please provide some details on this survey. Thank you. (male, 41 - 55 years)

- I just have a couple of comments to make. Firstly, the amount of big game animals is largely controlled by Aborigines and poachers. Secondly our natural resources department and Environment Canada do not have enough

manpower to control such hunting nor do they have enough manpower and resources to do accurate counts of big game animals in the above mentioned area.

Thirdly, the hunting done by regulated hunters is of little or no damage to big game populations in the area because of the strict regulations to law-abiding citizens.

Lastly, I would like to thank the U of M for selecting me to participate in such a survey. I have studied, photographed, watched and hunted big game animals in this area since 1980. I would gladly pay more to keep up the populations in this area but my first comment must first be greatly reduced. My name and comments may be used whenever needed. Thank you. (male, 26 - 40 years)

- I would be willing-to-pay more if I can see improvements in service, more activities. I would like to see the Ross south of Grandview (Sugar Loaf Warden Station) improved so local traffic could travel through the Park to the Rossburn side. (male, 26 -40 years)

- Hunting in Riding Mountain National Park should be restricted. There should be places for both animals and humans to co-exist, without the pressures of hunting. (male, 26 - 40 years)

- Our farm borders the Riding National park. Often we (my husband and myself) go for a walk and hunt during seasons. We encounter numerous numbers of elk, deer, some moose odd bear, coyote. A couple of years ago a lynx was seen just across the road from our place. We also spot different species of birds; hawks and bald eagles also snowy white owl. (female, 41 - 55 years)

Grandview - Non-permanent Residents

- Re: Question 3 - P.S. I pay now in taxes. (male, 41 - 55 years)
- Dear Sir or Madam, Other than enjoy seeing the wild animals, wildlife as we drive through Riding Mountain Park. That is all I can add to your research. P.S Am against any part of animals being sold. (unknown gender, over 56 years).

McCreary - Permanent Residents

- During hunting season which happens year around animals are displaced and chased and shot day and nite a herd of white tail deer were chased crossing highway and ran into them as taxodermmy is increasing soon there will be no wild life as they have got most of the great white owl the horned owl Jack rabbits and they will soon decrease the large mammals (male, over 56 years)
- Riding Mountain like other National Parks will always have large mammals. I wish you luck on your survey. I have spent 34 years in National Parks across Canada. Thank God we have them. (male, Over 56 years)
- in this area there is so many Poachers that we don't get much chance to watch the animals as they are shot off or chased back in the bush so no one can see them (male, Over 56 years)
- Sir : I live near the riding mountain National park on a farm, which has strips of bush and alfalfa and broom. I see more wild animals on the farm then I ever see when i travel through the Park.

The deer and elk calve on the farm, where they feel safer than they would in the park.

They stay around until the calves are big enough to travel thats sometimes to the end of July, but they do come back and forth all year. They have done at times alot of damages which runs in alot of money, but up to this



day I have never been approached by any government or organization as to what damage they have done and are doing. I have had fences torn down, strawberries and fruit trees damaged, fields of crops and hay trampled in wet weather sewer lines torn up, garbage cans bent up, clothes torn off clothes lines by bears. I am willing to put up with this just to have them around.

But now comes the provincial government and issues licenses starting the first week of Sept. and runs through to almost Xmas and then again after the new year. I've seen hunters sitting or parking right in front of our yard. Bugging you to let them hunt on your farm and if you don't let them, a lot of them do without permission, in the spring and summer we do have a certain amount of people that come around to see and watch the wild animals. (male, Over 56 years)

- I enjoy seeing the large animals that come on our land. I am not able to travel any distance to watch them, and am not able to help maintain their abundance.

We have our land posted and do no hunting. I cannot understand why the government sells licenses to hunt in this area when there is no place to hunt except on private property. (female, Over 56 years)

- As a landowner in the area (Norgate) I enjoy seeing animals in or out of the Park and also taking visitors to see them. It would be somewhat more worthwhile if more of the federal funding was funnelled to control the beaver Hatchery in the park. They cause us great dilemma on this side of the Park at our cost.

In regards to hunting I am a hunter, though not as active as I used to be.

We are not seeing as many white tails as we used to a few years ago.

Reasons Bow hunting. Muzzle loader and regular rifle plus the Natives day

and night. Why should any hunter be allowed 1 deer in any of these seasons? As a landowner (1 mile from the Park) I applied for my first elk license and lost in the draw yet many received license more miles from the park. Not Fair. (male, Over 56 years)

- With my opinion and everyone surrounding the Riding mountain National park, we consider it the most beautiful spot from here to the Rockies, but with the big ideas of the Natural Resources and Government getting "Game Outfitters" (Dean Sandulak, Kelwood) and Hunting Guides (Terry Ledoux, McCreary) just 12 miles apart to bring in hunters to hunt around 'our' Park, just to make a few bucks for themselves, our Park will be like Newfoundland without the fish, our Park without game.

This year I spent three weeks hunting around the park. I didn't see any game, just poachers - guides and hunting outfitters with their hunters.

I am very disgusted with this situation and the way things are being done.

Before Guides and outfitters came in there was all kinds of wild game. This fall the "wild game" was almost nil. (male, Over 56 years)

- I consider lost crop as money donated to the cause. (male, Under 25 years)

- I have lived with the elk, moose and bears all of my life and don't need to study them to identify them. I wouldn't say I have no interest in feeding them but they help themselves if they are hungry. They were making a nightly visit to a row of bales real close to the yard the winter before last. I would not be willing to pay anything (re : question 3). Those animals have been here as long as I can remember and I imagine they'll be here for a long time yet if we just let nature take its course.

we are farmers here, our land goes to the park boundary. We live here because we love this beautiful spot and I wouldn't want to live anywhere else, partly because of the animals and partly because this is where we make a living.

We can see animals from our door at times, we go to our west field frequently with binoculars to watch the elk. We are only 2 miles from east entrance to park so often go for a drive up there.

We usually drive up to our west field to see the elk. One evening my son and grandson went, we leave the truck at the top of a hill part way up and walk very quietly the rest of the way, the last few yards we crawl in the long grass. When we got there, there was a few out and the wind was blowing our scent away from them, before long there was 23 and they put on a hair-raising performance for us. They knew there was something in that long grass and made big circles in the field not very far from us (I didn't have my camera) snorting and barking. We watched for a good half hour then silently made our way back down the hills, leaving them still playing around. (female, Over 56 years)

- Their value just doesn't lie in all of these categories. Very important that they be guarded and protected from poachers and whoever uses parts of them for drugs or whatever. They are a great delight to children who catch a glimpse of them. As well as adults.

#### McCreary - Non-permanent Residents

- When on farm I watched never hunted the animals came and went as they wanted (male, over 56 years)

- Scenery is not to be denigrated but is magnified immeasurably with the presence of animals. Setting aside a preserve without making maximum use of it and maintaining the animals is a tragic waste! (male, 41 - 55 years)

L.G.D. of Park - Permanent Residents

- Dear Dave, Thank you for your questionnaire. I am very interested in wild animals and love to watch them. At present I have a black bear that comes to visit me every summer during berrytime and I must say that it is a delight plus I see deer on the farm and sometimes they cross my garden and that's a sight to behold. I do not live on the farm but go often in the summertime. I'm an elderly person who rents out the land but maintain the house and yard in the summertime. Therefore I doubt if my answers would be appreciated. Anyhow, I thank you for your concern and interest. Keep it up. (female, Over 56 years)

- We live a mile of the Park boundary so we can watch them out our window or driving through the Park.

- Am fortunate enough to live on land bordering the Park, and walk in the area virtually every day (hence no expenses). Feel it is very important to maintain wildlife population.

- Re: Questions 2 & 3.

We would question the abundance of large mammals in some of the areas adjacent to R.M.N.P.

We have 3 Wildlife Management Areas in close proximity to our home. We ski, hike, ride and canoe through these areas often.

These areas are as follows:

- 1) The east 1/2 of Sec. 21, 19-18
- 2) The NE 1/4 of Sec. 15, 19-18

3) The NE 1/4 of Sec. 22, 19-18

We live in the SW of Sec. 22, 19-18. The NW of Sec. 22 is Federal Park land attached to R.M.N.P.

A few years ago we would often see wild life in our travels throughout the area. A dwindling population made us concerned and we wrote to the department of Natural resources suggesting that they stop hunting in these areas for a few years to let the wildlife build up again. We genuinely feel that there are not enough animals to sustain a hunt. Their answer was that there were plenty of animals, to which we - and our neighbors - disagreed. We feel our assessment of the situation should be more valid as we are permanent observers here. Now we hardly ever see any elk or moose, and very few deer. This year we have seen no bears at all.

There is an added problem regarding hunting in these areas, as land adjacent to the Wildlife Management Areas has become populated by those of us who regularly hike, ski, ride, and canoe in the vicinity. We have already experienced safety hazards well within the 300 metre restriction as outlined in the Manitoba Hunting Regulations.

We would also question the mandate of the Wildlife management Area organization. We fully realize that this is not synonymous with a wildlife sanctuary but surely, to deserve the title, it should provide a relatively safe habitat for animals to multiply and live in their natural state. (female, Over 56 years)

- I want to see wildlife survive in this area. I want to see it as I go about my business. (male, 41 - 55 years)

- Basically most of the animals other than Bison I see on my land during summer while haying. Bison I enjoy seeing in the Park. (male, 41 - 55 years)

- It is my opinion and the opinion of many residents of this and many areas surrounding the Riding Mountain National Park, that Parks Canada does not concern itself anything like enough with the welfare and preservation of wildlife in this park. The fact that National parks are some of the last refuges of wildlife is given little or no consideration.

The policies of the naturalists would seem to predominate, while on the surface this seems beneficial to the Park it does little for the welfare of wildlife. For instance in past years grazing leases for cattle were allowed. This was advantageous to the elk, deer and moose population as it kept the existing meadows open and free from forest encroachment, and provided excellent feeding areas for these animals. Parks Canada put a stop to this, as a result open meadows are slowly receding as the trees move in. Strictly controlled logging was allowed to the local area residents. Parks Canada put a stop to this. As a result vast areas of the park are clogged and criss-crossed with fallen trees, to what purpose, and undoubtedly hampering the movement of large mammals, especially, and adding to the stress of winter. In a small Park such as Riding Mtn, surrounded as it is, entirely by farmland (and hunters) the space for these animals is limited, and whereas in years past they could move on when an area was decimated by fire or fallen trees, etc. they now face certain death once they venture outside the Park. Leaving everything (except for the many areas cleared and maintained for human enjoyment) au natural, is simply not in the best interest of the wildlife in this Park, which should be, but is anything but, the top priority!!!

Poaching which has always been a problem, is now as good as given free rein, and with the blessing of the Park! Numerous Warden Stations have been closed down along the Parks' perimetres, a fact well known to poachers.

The Parks entrance gates are manned briefly, only in the summer to collect a toll from visitors, they close up at 10pm approx. The Park is thus left wide open to mischief, vandals and poachers, who take full advantage of the leeway.

Although there are signs along the #10 highway warning the public "for their own safety" that it is "unlawful" to feed wildlife. There are no worded signs advising the public to slow down and BE PREPARED TO STOP, when sighting animals. Thus showing some interest and concern for the welfare of animals who may be hit and killed by the many vehicles exceeding the already excessive (especially at night, early morning and in fog) speed limit, which is barely enforced.

One has to wonder, is the intention of this survey to determine whether or not all concern for wildlife in Parks should be abandoned as too costly?

What is its intention and who is the final recipient?? (female, Over 56 years)

- Moose and elk numbers are down from previous years. WTP provided that the main purpose was not for hunting. With the many hunting seasons now in existence it is next to impossible to go into the bush for recreational reasons.

(male, Over 56 years)

- Deer are not in abundance. All shot through nite lighting. A real concern for cattle farmers. We milk cows and had shots fired at barn from night lighting hunters.

Trips are on a daily basis. Checking cattle, fencing, etc. As farm task are done, cameras etc. are always with me. Live next to boundary - animals roam our farm - even go thru yard and feed on bales etc. (female, 41 - 55 years)

L.G.D. of Park - Non-permanent Residents

- Good Luck Dave Beeusaert. Watching mammals is a bonus and has never been included in costs. Hunting is negligible due to poaching and Native hunting in area. I now hunt elsewhere to avoid disappointments due to improper ethics.

(male, 41 - 55 years)

- I pay taxes on the land, that's enough! (male, 26 - 40 years)

- The property we own is used more by our adult children at present time (we are seniors). Our son (name withheld), an amateur photographer, would have much more input into your survey, as he does a lot of camping and hiking in the Park. You could contact him via our address. (female, Over 56 years)

- What about the effects of Native hunting in the area all year and including at night?? I would not pay one cent while this is occurring.(re - question #5)

(male, 41 - 55 years)

Rosburn - Permanent Residents

- Concerned with Native hunting. (male, 41 - 55 years)

- Dear Sir (Madam), When I started filling out your survey I thought what a ridiculous survey! The Government spends thousands of dollars on wildlife management, and to me this is a joke.

Don't get me wrong, I'm all for this but where is it going? You put money in to increase big game and the Natives are destroying it. It really bugs me seeing the Natives hunt any time of the year. I've seen them shoot female elk and deer in the spring during calving season. They've shot bambies! What for? How can you justify this? Come fall they are out in full force killing anything anywhere, they don't care if they're on private land. When hunting season comes, there's nothing to hunt because they've been scared away as they've been shot at for months.



Who gets the license for big game? Not many local people or the landowners. Hunters come from all over Manitoba, figuring just because they got a license they can go and do whatever they please. They trespass, drive all over alfalfa field and drive through locked gates.

Nothing is done about the over populated beaver. Do you have any idea of this frustrating animal, and the havoc they can cause? They dam up crossings, flood hay fields, but nothing is done. The farmer has to foot the expense to get rid of these pesky animals, yet they keep coming back, so once again the farmer is fighting a loozing battle.

Do a survey on the Government. See how they'd handle these issues if they had to live out here. (female, 41 - 55 years)

- In winters when there has been alot of snow some of the neighboring farmers have fed the white-tailed deer. It was interesting to see the deer come to feed in the evening.

When driving through the Park, which is three or four round trips a year, I've seen bear, moose, elk, and deer. Occasionally we have driven through the Bison compound. That is usually the only time that I see large mammals.

I would not be able to participate in activities of watching, photographing, etc. large mammals but I could give a small donation each year to help. (female, Over 56 years)

- As a neighboring landowner, I already pay enough in damage to crops, fence, etc. by big game. (male, 26 - 40 years)

- I travel on No. 10 to Dauphin. I enjoy to see moose or bears or any animal along the highway. Usually stop and photograph if I can. (male, Over 56 years)

- I am sorry I can't be of any help to you as I am older person and not well. But I do like to see animals when we go through the Park. I used to go the national park to Deep Lake. Can't go there anymore. There is no more fish there. They didn't stock any. It's a very nice place. (female, Over 56 years)

- I don't hunt and I don't go looking for these mammals. But if a mammal (black bear) or white tail deer runs through my farm and I happen to see it, I enjoy watching it. (male, Over 56 years)

- I provide feed, oats and hay during severe winters for white tail deer. I guess that is my contribution. Also, much of my land has been left in the natural state so is good habitat for wildlife.

About the only time spent in observing animals is when I'm doing general farm work, or when I feed the white tailed deer in winter.

Actually I live in shoal Lake municipality (north west corner) on the south edge of Rossburn municipality. I own land in Rossburn municipality also. The land I own has considerable bush and native pasture, therefore has a fairly large population of white tailed deer. I live over twenty miles from the park and rarely go there so white tailed deer is the only large mammal I am involved with. I am interested in the others also though. Occasionally a bear is seen in this area. Some land in Shoal lake municipality is leased to the H.E.L.P. program. (male, Over 56 years)

- Because of hunting licenses issued for nine months out of a year and Natives' hunting constantly there is very few wildlife left around this area. Very very few wildlife are left here to watch. Because of so few wildlife left, there is nothing left to watch. (female, 41 - 55 years)

- I just go out for a wake in the park to look at wildlife. (male, 26 - 40 years)

- I am involved with the Rossburn Game and Fish Assoc, our interest in wildlife and big game is to ensure their existence for future hunters and also for the purpose of just enjoy viewing wildlife in the natural state. (male, 26 - 40 years)
- The enjoyment I derive from a visit to R.M.N.P. is always enhanced by a sighting or a chance to photograph any wildlife I might encounter, even when driving through I would not wish that they be allowed to disappear from the area. However, I do not feel it is fair to expect landowners (especially non-hunters) to pay extra for their retention. (female, Over 56 years)
- Poaching and Native overkill is a major concern. (male, Under 25 years)
- Not willing to pay. Cut out hunting of large animals. I feel that hunting seasons should shortened or even cut out. To much prime breeding stock is being shot to hang on someones wall or to win a trophy. (male, 26 - 40 years)
- Elk population has declined rapidly during the past 4 years due to hunting during hunting season. Please note that big game elk and moose hunting must be stopped. Also the beavers have polluted the water and is stale with green slime and the elks and moose have got diseased from it as the elks around Rossburn had T.B. Hope you look into this matter. Thanks. (female, 41 - 55 years)
- I plan to continue hunting. (female, 41 - 55 years)
- Just stop hunting, especially bear baiting.

As a landowner and farmer, I wish sincerely that the park authorities would consider taking action to reduce the number of BEAVERS. It is great to have a 'national park' for the population at large and the tourism, but it is costing us personally many hours to remove dams, etc. build by the greatly increased beaver population. Furthermore, many acres of land are flooded, costing us for the past 2 years considerable loss of hay and pasture.

I think some consideration on the 'park authorities' side would only be fair. It is the farms around the park that provide fresh pastures for many of the animals out of the park! (female, 41 - 55 years)

- Beaver problems have to be looked into. The elk population I hear is down. Maybe the season should be closed for a year or two. Native hunting looked into. (male, Over 56 years)

Rosburn - Non-permanent Residents

- Being a landowner adjacent to Riding Mountain National Park and paying property tax and having mammals prosper off our land is a sufficient contribution, I feel.

Bear and wolve populations have increased dramatically recently because these mammals have no predators and they put much pressure on elk, moose, and deer offspring. (male, 26 - 40 years)

- I think you want me to fill out the questionnaire but it is so unbelievably off the mark as to how, when and by what means residents and non-residents use the park it must have been prepared by someone who spends their summer in the Whiteshell or hasn't gone past Clear Lake or Lake Audy.

I can't see how you would want to use a "boat and motor" in the western end of the park because the portages are real dandies. I can't see how you would spend so much paper asking about seeing, photographing, and studying large mammals when locals and ex-locals and new locals go out in fall for the pleasure of hearing elk calling. Personally I have heard more elk and moose than I have ever seen (bears - I've seen more than I've heard). A naturalist who spends time out there would have to only be spending July in the park to miss this aspect of large mammal activity. Question 9 seems to assume that one

has to spend money to be in the company of wild animals. Me and my wife own a farm house (and a campsite at Norman lake) but I can't estimate what that would be in terms of cost towards large mammal sight seeing. My neighbor also has a number of one horsepower saddles that we have used to see the inside of the park - yet I don't pay for them (I would rent them if he asked). In effect question 9 was prepared by a weekend tourist in need of a corrective lens. Thanks for lending an ear. Sorry but I couldn't stop once I got going.

(male, 41 - 55 years)

- WTP nil, they will survive on their own. (male, 41 - 55 years)

- Dear Dave, in response to your questionnaire, I no longer live in the R. M. of Rossburn since my husband died. I have lived in the town of Birtle, but ever since we were children "the park" has been a favorite place for a Sunday picnic, a weekend campout or a drive on a nice summer day (to Lake Audy). When my husband's family were growing up, they spent a week or two (as time permitted) camping at Deep Lake, and his father got logs from the park for lumber. I think they also pastured cattle there at one time, but I can't be sure of that.

The wildlife, in my opinion should be able to take care of themselves, as nature intended, as long as the grazing and shelter are not destroyed. It is my understanding that it is so long since a fire has been through the western part of the park, that the grazing is not what it should be. When they over-populate, then they migrate out. I'm not sure what you intended to spend money on, but I have a big problem with people who buy land just to come and hunt on, and then influence the way the R. M. does things by voting in opposition to the people who live and raise their families there. That is just a part of my opinion on this subject. (female, Over 56 years)

- If the intent of the survey is to now ask the general public to provide funds for the operation/function of RMNP facility as a nat'l park, I am not in agreement. Since our park's founding in 1933 I feel it is up to the fed and prov govern't to foot extra expenditures. I don't feel the general public should be taxed/or approached (as though out of guilt) to preserve the beauty and natural setting just because of recent cut backs.

The government caused the increased spending without proper management of funds. The public has paid enough.

Yes the national park is a place of beauty and enjoyment for generations to come. The public is aware of this but what about the government? (start at the federal level). Maybe some of our well-\$ed politicians could take some of their \$ and help out. Start at the top 1st. We the public know the common sense needed to preserve nature. We've paid enough for government blunders. Don't use innocent animals to play at the public's heart strings. (female, 41 - 55 years)

\* These are the written comments as they appeared on the surveys. They have not been corrected for spelling or grammatical mistakes as to not in any way influence the interpretation of the comments.