COMMUNITIES FOR CONSERVATION:
Creating a framework for plains bison
conservation in central Saskatchewan

By

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A thesis submitted to the Faculty of Graduate Studies.
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MASTER OF NATURAL RESOURCES MANAGEMENT

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Abstract

The Sturgeon River plains bison (*Bison bison bison*) herd, located in Prince Albert National Park (PANP), Saskatchewan has grown at a rate of 10-14% annually. The herd's range has expanded accordingly, with numerous incidences of bison crossing onto private lands, causing damages to crops and infrastructure. Landowners have had little input into the management of the herd inside PANP which has further compounded their frustrations. This research applies the theoretical aspects of both collaborative and ecosystem-based management to construct a framework for a grassroots organization that can work in partnership with other agencies for bison management. In order to accomplish this, case study analysis and thematic analysis of semi-structured interviews were conducted. Interviewees were selected either through self-identification or through the peer reference system. The results of this research reinforce the importance of public participation in resource management at the private/public interface. Management at this interface is complicated by issues of ownership, power and control, and decision-making originating from various institutions and jurisdictions. Involving communities from the start and allowing them to fully participate in decision-making is seen as a critical step to overcome some of these complications. Furthermore, the creation of a community-based organization as defined by the participants is thought to act as the agency representing community interests through the election of volunteers helps overcome difficulties in obtaining individual commitment. Through interviews, discussions and meetings, this research has assisted with the actual creation of the "Sturgeon River Plains Bison Stewards Inc.", a community-based-organization for plains bison conservation.

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1. INTRODUCTION

Research Questions

This study endeavoured to determine how best to promote stakeholder collaboration for the conservation of the Sturgeon River plains bison *(Bison bison bison)* herd located primarily in Prince Albert National Park (PANP), Saskatchewan. Specifically, this study focused on developing the framework for a collaborative conservation initiative that encourages interested parties (farmers, ranchers, First Nations, Parks Canada and others to take an active role in promoting the social, economic, and environmental benefits of plains bison conservation. Two questions were posed: what can we learn from published literature and other examples of community-based approaches to wildlife conservation that can be adopted for bison conservation around PANP?, and what issues do interested parties feel need to be addressed for a collaborative conservation initiative to work? The results of this thesis will enable the making of a blueprint for the Sturgeon River plains bison conservation initiative.

Context

Prince Albert National Park (PANP) is home to the Sturgeon River plains bison herd (Figure 1.1) (Bergeson 1992). It is the only wild plains bison herd in its natural range in Canada. Over the past 35 years, bison have been venturing outside of the Park in larger numbers (reports of up to 150 bison) resulting in damages to crops, in the form of wallows (Figure 1.2) and hay bales (Bergeson 1992, Frandsen 2004).

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Figure 1.1: Sturgeon River plains bison herd

Figure 1.2: Bison wallow on a field.

Damage to fences are also of growing concern to landowners (Bergeson 1992). Currently there appears to be a high level of support for the protection of the bison herd, however if damage continues it is possible that support from the local landowners will diminish (Bergeson 1992, Frandsen 2004). There is also concern that the herd will interact with livestock, increasing the risk of spreading disease and exchanging genetic material between domestic and wild populations.

(Bergeson 1992, Frandsen 2004)Some people may consider bison to be recently introduced to the area. This is true in that the species was reintroduced north of the park in 1969, however, there is historic evidence which indicates that bison were once a primary herbivore in the area (Bergeson 1992). There have been several skulls found in farmers' fields that, based on cranial measurements, indicate not only were bison present, but they were the same subspecies as the Sturgeon River animals (Bergeson 1992). This historic association is significant because it creates an historic and cultural tie with the communities in the area, which is essential in promoting bison conservation (Schusler et al. 2003). Moreover, it indicates that bison were once able to survive in the area and should be able to do so again.

The lands around the periphery of the southwest corner of PANP, where the bison occur, are primarily used for crop production or cattle ranching (Bergeson 1992). However, not all the land is being used for agriculture. The Northern Provincial Forest lies to the northwest while to the southeast lies a community pasture and a Wildlife Management Unit (Bergeson 1992) (Fig. 1.3). Also near the Park is the Big River First Nation as well as the regional municipalities of Big River, Canwood and Shellbrook. Thus, the range of stakeholders that may be directly interested in promoting the

conservation of bison includes local residents, business owners (such as outfitters), ranchers, farmers, First Nations communities, and the provincial and federal government. This does not include those who may have a stake from an indirect perspective, which includes non-governmental organizations and other provincial, and national citizens.
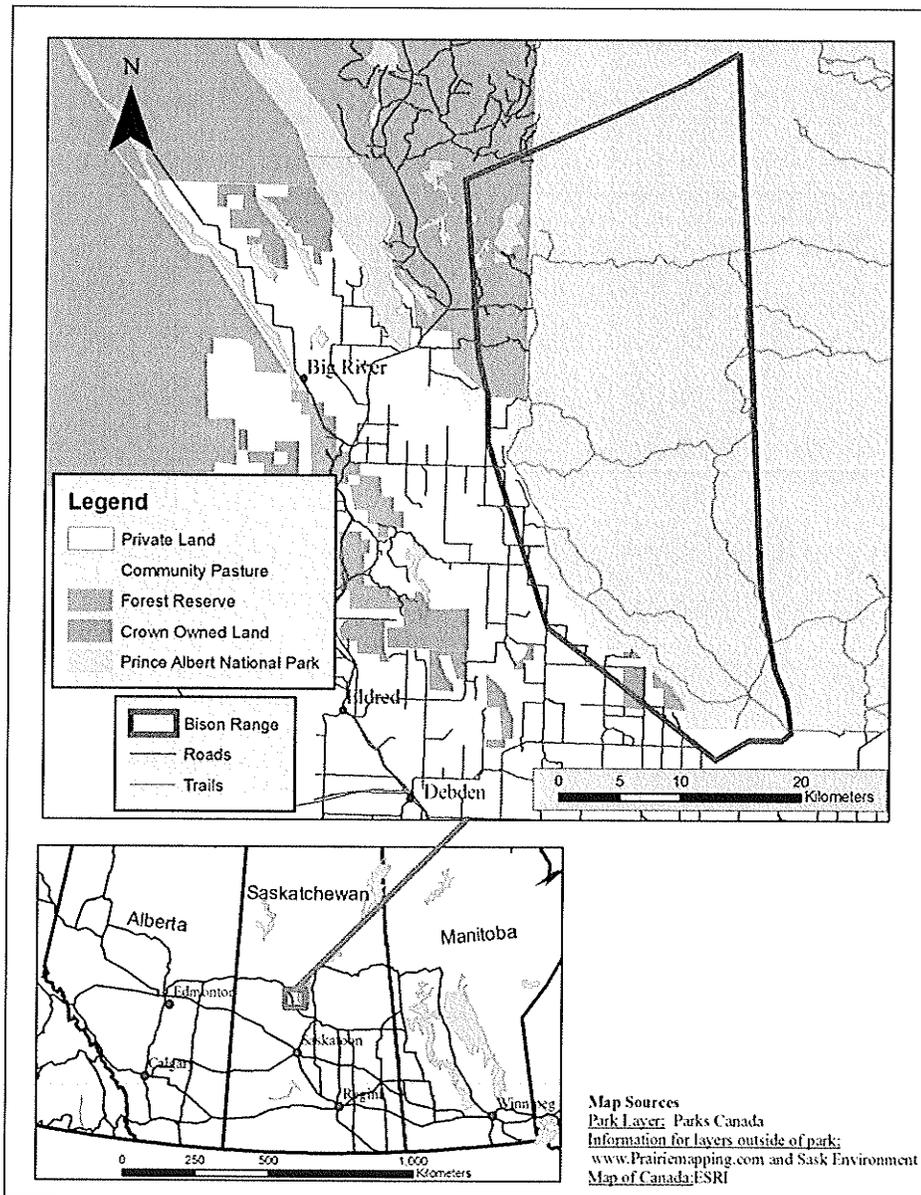
Figure 1.3: Map of study area

In order to address bison conservation issues in and around PANP, a Sturgeon River Plains Bison Management Strategy Development Team was in May, 2003 with the primary goal of developing a management plan for the herd and to oversee its implementation. The Management Team has been led by Parks Canada, with representatives of various jurisdictions including Saskatchewan Environment, three regional municipalities, the Saskatchewan Wildlife Federation and local guides. This is currently the main avenue of stakeholder input into any issues that may develop relating to bison. The information that comes from the Management Team is typically only one-way to the West Side Steering Committee and the public. There is limited sharing of responsibilities among interested parties (Frandsen 2004). Without significant participation from the local community and affected landowners, the development of a management plan that is acceptable to the local community has been a slow process. It is evident that the implementation of management initiatives will require local cooperation. Thus, the development of a collaborative conservation initiative is key for the effective management of this bison herd.

Problem Statement

The foundation of the Sturgeon River herd was an estimated 10 individuals that wandered into the Park from Thunder Hills, Saskatchewan in 1969 (Frandsen 2005). Since then the herd has been growing at a rate of 10-14% per year, and has a current population of approximately 400 individuals (Bergeson 1992, Frandsen 2004). The summer range of the bison runs from Rabbit Creek (southeast) to Lost Creek (northwest) (Bergeson 1992). This area is approximately 150 km² (30 km north to south

and 5 km east to west) and lies entirely within the Park boundaries (Bergeson 1992) . The typical area where bison can be seen outside the Park is approximately 10 km² (10 km north to south and 1 km east to west) (Bergeson 1992) (Fig. 1.3). Bison have been seen outside this range, however these are typically stray bulls and not part of the main herd (Bergeson 1992).

The primary parties involved in making decisions surrounding the Sturgeon River plains bison herd include Parks Canada, Saskatchewan Environment, ecotourism operators, and landowners. Each of these parties has a different perspective on the herd. Parks Canada's mandate requires Canadian National Parks to strive towards ensuring ecological integrity (Parks Canada 2006). The Panel on the Ecological Integrity of Canada's National Parks (2004) states that "An ecosystem has integrity when it is deemed characteristic for its natural region, including the composition and abundance of native species and biological communities, rates of change and supporting processes." The park sees the reintroduction of a native species as important to the maintenance of ecological integrity in the region. Consequently, from PANP's perspective, maintaining a free-ranging herd of plains bison is of primary importance and thus Park staff are willing to work with other partners to ensure the long-term viability of the herd. Saskatchewan Environment is responsible for ensuring sustainable use of the environment and resources, including wildlife management (SERM 2006). As the presence of bison becomes more common outside of PANP, Saskatchewan Environment conservation officers and regional biologists are faced with more challenges to balance the welfare of the bison with that of local people. As a result, they wish to work with other agencies and interested parties to create a management plan that is acceptable to the public.

Nature-based tourism operators also wish to see the herd protected, but they may have different motivations. Nature-based tourism operators make their livelihood from providing people with a specific service, focused around some aspect of the 'environment', on a fee for service basis. Accordingly, they can benefit from marketing Canada's only free-ranging herd and providing tourism experiences surrounding it.

Landowners, however, have a different opinion, particularly since a large majority of the privately-owned land around the Park is used for crop production or cattle ranching (Bergeson 1992). The bison do not benefit the owners of these lands, as fence and crop damages can become quite costly. As a result, many people want the bison managed in a way that will not impact their ranching and farming activities in an adverse way.

If the herd continues to grow, it will soon surpass the capacity of its current range and expansion into surrounding lands in and out of the Park will likely occur (Frandsen 2004). Currently, Parks Canada is not engaged in significant active management of the herd (i.e. fencing them in, removing animals, providing feed, etc) (Frandsen 2004). A Strategy Development Team was formed to develop a collaborative management strategy to deal with growing concerns . As part of the strategy, the team recommended more mitigation of the negative impacts of an expending bison herd on farming and ranching practices. The team also recommended more investigations of the potential positive impacts of this herd through, per example, the development of regional economic opportunities. It was suggested that this could be accomplished through the formation of a community-based conservation initiative that closely work with the local communities

on various initiatives. Such an organization could eventually replace the Strategy Development Team, as this was an ad-hoc group with no permanency.

Objectives

This study had three primary objectives:

1. to determine the key processes involved in the creation and continuance of existing community-based wildlife conservation initiatives in Canada and the United States and their applicability to the Sturgeon River plains bison

2. to create a framework for a community-based organization that will foster bison conservation, and

3. to make recommendations for the development of a conservation initiative for plains bison in Saskatchewan based on the principles of ecosystem and collaborative resource management.

Research Design

This study used a research design which included reviewing the relevant literature, learning about similar approaches to wildlife management through a case study analysis, and conducting field work. Chapter one introduces the project, outlining the context, research problem, objectives, and research design. Chapter two is a review of the relevant literature on plains bison, collaborative management, ecosystem-based management, and protected areas management in Canada. The literature review helped set the stage for my research, helping guide the methods and analysis.

Chapter three, is a review four cases involving communities in conservation. A case study approach allowed me to follow intuitive paths towards defining the possible aspects of the cases that worked and that may be applicable towards other similar cases (Yin 2003). Identification of case studies was completed by selecting cases involving a wildlife management issue surrounding a large herbivore, at the interface of private and public (protected areas) land in Canada and the United States. Questions answered from each case included who were the participants, what were their main conservation objectives, what were the key processes for the establishment of conservation organizations, what were some successful initiatives and what are some remaining challenges. The results of this review help provide guidance for the Sturgeon River plains bison herd conservation initiative which is the main focus of this thesis.

Chapter four outlines the framework for an organizational structure that promotes bison conservation. This was accomplished through participant observations (Bernard 1994). This included spending the first month in the field with biologists conducting bison research, working with a bison rancher, pulling fences, and learning about farming. Participant observations not only helped develop the legitimacy of my research but also helped me develop a better understanding of the issues associated with bison conservation in the area. The results of this chapter point to key process elements for creating a community-based organization for the management and conservation of the Sturgeon River plains bison herd.

2. LITERATURE REVIEW

In order to help develop my study design, a review of relevant literature was conducted. Due to the interdisciplinary nature of this research, different topics are covered including the life history of plains bison approaches to wildlife management and associated organizational and governance structures. Finally, I briefly present approaches to resource management adopted for protected areas in Canada.

Plains Bison Life History

Bison are the largest indigenous mammal species in North America, with males weighing up to 900 kilograms and standing over two meters tall at their shoulders (Figure 2.1) (Demarais and Krausman 2000). Females tend to be much smaller, weighing approximately half that of a large male bison (Demarais and Krausman 2000). Mature plains bison are a dark brown colour with a pronounced cape of fur over the forequarters, neck and head (Demarais and Krausman 2000). Interestingly, newborns and juveniles have a reddish-brown colour, however, at around four months of age their colour changes to reflect that of mature bison (Demarais and Krausman 2000).

The diet of plains bison is essentially composed of graminoids (primarily grasses and sedges) (Bergeson 1992). Habitat selection is highly influenced by the presence of browse available, however the presence and amount of water is also an important factor (Fortin 2000). Plains bison prefer open grasslands and low-lying sedge swales, with nearby forest stands they can use for cover from storms and sun (Figure 2.2) (Hawley et al. 1981, Bergeson 1992)

Figure 2.1: Plains bison (*Bison bison bison*).
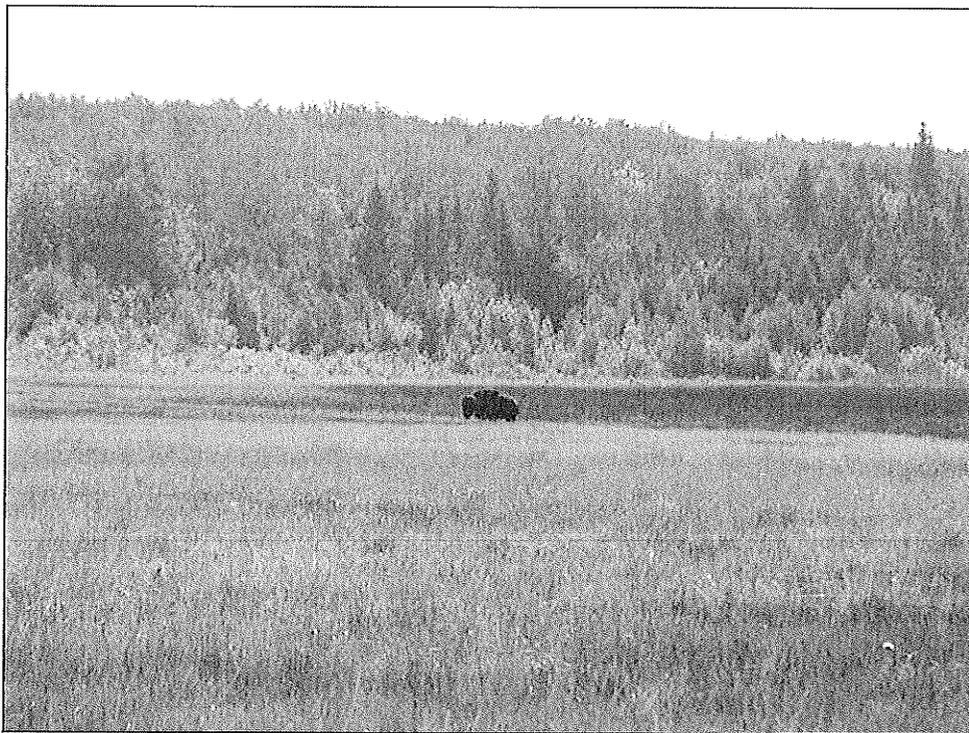
Figure 2.2: Typical plains bison habitat.

The mating season for bison, or rutting season, occurs during the summer months (Demarais and Krausman 2000). Males are sexually mature at two years of age, however they typically do not mate until they are approximately six years old as they have to compete with older, larger bulls (Demarais and Krausman 2000). Females do not mate until their third summer (Demarais and Krausman 2000).

There are currently two recognized sub-species of North American bison; plains and wood bison, the latter of which will not be discussed (Bergeson 1992). Plains bison can be found across Western Canada, from Manitoba to British Columbia (COSEWIC 2005). The current number of free-ranging and semi-captive mature bison numbers approximately 1000 in six populations (COSEWIC 2005). These populations can be found in Pink Mountain, British Columbia; Elk Island National Park, Alberta; Old Man On His Back, Grasslands National Park, and Prince Albert National Park, Saskatchewan; and Riding Mountain National Park, Manitoba (Bergeson 1992, COSEWIC 2005, Parks Canada 2006). Plains bison are currently listed as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2005) but have not received such designation under the Species at Risk Act.

Plains Bison Management Concerns

The presence of plains bison in a human inhabited system can result in a number of concerns for local landowners. One of the biggest management concerns for plains bison is the risk of disease transmission, specifically of brucellosis and tuberculosis (Bergeson 1992, Demarais and Krausman 2000). While the risk of transmission for these diseases from free-ranging bison to domestic herds is relatively low, there have been

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incidents of disease in captive herds (Demarais and Krausman 2000). Consequently,

disease transmission must be given appropriate attention by managers, particularly if

domestic herds of cattle or bison are in a region of free-ranging or semi-captive herds.

Another concern surrounding bison management is the impact bison can have on

the infrastructure of neighboring private lands. Fence and crop damage are common

when bison enter private farmlands. This is the concern that is of most prevalence in the

research area for this project. Lloyd O'Brodovich, Parks Canada Warden at the Sturgeon

Crossing Warden's Station, summarized the history of bison in the region as follows;

> The excursion problem began in the late summer/fall of 1969 following the initial release by the Saskatchewan government in the winter of 1969 in the Thunder Hills region north of the Park. This resulted in the roundup in the Big River Community pasture area northwest of the station and initial transfer of at least 17 bison to the area immediately north of the Primrose Lake Air Weapons range. This led to the establishment of the free-ranging bison herd in the air weapons range along the McKusker River drainage, and in the McKusker Lake area, (this seed group of animals' experienced protected growth similar to their survival in PANP because they were in federally owned military lands with restricted access). There have been reports in recent years of sightings adjacent to the south and east boundaries of the weapons range in the Meadow Lake regional Park etc.
>
> The remaining small group of bison using the Park area continued to be problematic for the Sturgeon area landowners, resulting in the installation by PANP of the Texas gate adjacent to the river crossing bridge in the early 1970's to prevent simple excursions on the road/bridge access.
>
> Throughout the 1980's excursions continued although they created minimal problems due to the small size of the population and the accordingly small numbers. When I took over Sturgeon Crossing District in July of 1993 there were excursions but the population was just under 100 at that time so again it was just small groups or isolated individuals, (mainly bulls). With the growth of the population throughout the nineties there were a few more excursions with larger numbers. The situation was greatly exacerbated by the drought period from 2001-2003 when Sturgeon River levels were low and there were many more easily crossed access points on old beaver dams and old ford crossings etc. It was during this period when larger mixed groups of 30-50 animals with adults, juveniles, as well as young of the year began to frequent provincial lands in selected areas. In summary, adjacent landowners have been dealing with the so called "bison problem" since 1969, the year of the initial release (O'Brodovich 2006).

To summarize, issues surrounding the presence of the Sturgeon River plains bison herd have been increasing as the herd increased in size since its introduction in 1969. This was compounded by the 2001-2003 drought period, which allowed for more crossing points as the Sturgeon River water level was lower. Since then, excursion of large numbers of animals has continued, causing significant impacts to adjacent landowners. This has resulted in a number of bison deaths over the past few years. Consequently, management action must be taken in order to ensure the long term viability of the herd while reducing the herds' impact on landowners. The following section discusses various approaches to wildlife management.

Approaches to Wildlife Management

Traditional resource management, including wildlife management, has been carried out using a top-down approach, where managers have made decisions and policies without input from people impacted by these decisions. However, it is now recognized that such an approach is not effective due to the complexity of resource management problems (Ludwig 2001). Instead, a process that encourages cooperation among various interested parties should be used (Ludwig 2001). This section of the thesis reviews both collaborative management and ecosystem-based management, as these approaches will be insightful towards establishing community-based conservation. Collaborative management can be defined as a "situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the

management functions, entitlements and responsibilities for a given territory, area or set of natural resources" (Borrini-Feyerabend et al. 2000, pg 1). These social actors can take one of two forms, that of stakeholders or the public. The public consists of a wide range of participants whose interests are not clearly defined, but who may have valuable skills or knowledge to contribute. On the other hand, stakeholders have a more clearly defined interest, or stake, in the issue and may also have more resources at their disposal (Margerum 2001).

Conservation problems are often considered 'wicked' problems, characterized by having no definitive formulation, no stopping rule and no test for a solution (Ludwig 2001). Additionally, there are often social, cultural, economic and biological factors involved (Ludwig 2001). To further complicate matters, these factors do not stand independent of each other but are interconnected in an intricate network that is analogous to a spider's web. A disturbance felt on one section of the web is felt throughout, eliciting a response. Finally, to add yet another dimension, resource issues are often concerned with limited resources, while involving multiple constituencies (Smith and McDonough 2001).

Science has often tried to come to terms with wicked problems by approaching them in an analytical way that breaks the problem down into its component parts, attempting to address each component separately (Kapoor 2001). A belief exists that an unbiased observer can come up with all of the answers to manage a resource (Kapoor 2001). This point of view removes humans from the environment, and promotes a philosophy that there are no consequences that result from resource exploitation and that a top-down approach to resource management is most appropriate (Kapoor 2001).

We now know through experience that this is not the case. Humans are not independent of their environment (Kapoor 2001, Woodley 2002). We depend on natural resources to provide our basic needs as well as to promote economic growth and social welfare. Our actions can result in disastrous consequences, such as extinctions of flora and fauna and the pollution of water supplies.

The failure of many conventional management systems has opened our eyes to just how interconnected we are with the environment and demonstrated our need for new means of managing resources. Additionally, it is not sufficient to define legal boundaries for protected areas with the assumption that they require no management (Woodley 2002). Many parks are surrounded by areas of human habitation and there is significant interaction between parks and private land, sometimes to the point that it is difficult to tell the where one ends and the other begins (Woodley 2002). The analytical, or reductionist, approach is often insufficient to address these issues, as they are complex problems which cannot be understood by breaking them down into their component parts. Doing so does not address the problems created through the interconnectedness of complex problems. Consequently, an approach which over-emphasizes the role of either ecological or social concerns in decision-making must be replaced with an approach that integrates the two. Collaborative and ecosystem-based management provide the framework for just such an approach and is outlined in the following section.

Collaborative Management

The terms collaborative management, co-management, and cooperative management are often used interchangeably throughout the literature (Borrini-Feyerabend 1999, Weitzner 2000, Pomeroy and Rivera-Guieb 2006). In particular, a collaborative process can include a wide spectrum regarding the degree of involvement, ranging from seeking consensus to sharing authority in a formal way (Borrini-Feyerabend 1999). For the sake of this research the term collaborative will be used over cooperative and co-management as it is a more neutral term surrounding stakeholder participation management (Weitzner 2000).

Collaborative management involves a wide spectrum of thoughts, ideas, theories and concepts and can thus be labeled as interdisciplinary (Kapoor 2001). This type of approach has costs and benefits. Kapoor (2001) lists the benefits of collaborative management as the ability 1) to expand program information and representation, 2) to help clarify and stabilize communication and power relationships between stakeholders, 3) to create and enhance iterative programming and 4) to encourage local commitment, ownership and accountability. Perhaps the biggest risk, or constraint, of a collaborative management process is the degree of uncertainty that is involved within it (Michaels et al. 2001). Some other constraints include: a heavy commitment of time and resources, institutional reticence, corruption, the fact that communities are not monolithic and some people may have polar opinions, and finally the potential for the reinforcement of social inequalities (Agarwal 2001, Kapoor 2001, Michaels et al. 2001).

Grumbine (1994, pg 31) defines ecosystem-based management as "integrating scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term". There are two different philosophies towards ecosystem-based management that exist in the literature. The first is the *government land manager perspective* (Slocombe and Dearden 2002). This perspective drives ecosystem-based management to try and address the conflicting demands of legislation, the public and conservation by stressing inter-agency cooperation, the use of legislation for guidance and direction and public consultations as opposed to true participation (Slocombe and Dearden 2002). The second is the *ecological perspective*, where proponents stress the need for large, intact areas to promote conservation (Slocombe and Dearden 2002). This perspective results in managers having to look outside of their park boundaries towards public and private lands in order to conserve populations in parks.

Grumbine (1994, pg 31) defines ecosystem-based management as "integrating scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term". This definition follows the ecological perspective and is perhaps one of the most cited definitions to date (Slocombe and Dearden 2002). The principles defined by Grumbine (1994) are the result of a comprehensive analysis of the literature surrounding frameworks of ecosystem-based management which identified common themes throughout and include: a hierarchical context, ecological boundaries, ecological integrity, data collection, monitoring, adaptive management, interagency cooperation,

organizational change, humans embedded in nature, and values (Grumbine 1994, Grumbine 1997). Thus, Grumbine's (1994) approach allows the common themes of a number of frameworks to be used for this study and these are discussed below according to their relevancy towards conservation objectives and structure and governance.

It is important to note that collaborative and ecosystem-based management are not mutually exclusive. In particular, a collaborative approach could be used to help strengthen relationships between different agencies, create iterative programming, and encourage local involvement, in protecting native ecosystems over the long term (Grumbine 1994, Kapoor 2001).

Conservation Objectives

Traditionally, society has held different worldviews of the environment. The biocentric point of view is primarily concerned with ecosystem health and integrity above all else while social issues are only considered after the fact (Lackey 1998, Kapoor 2001). Conversely, the anthropocentric viewpoint is that the environment provides benefits which are accruable to society (Lackey 1998). In other words, this viewpoint is community-oriented and not necessarily environmentally-oriented (Kapoor 2001). This does not suggest however, that the anthropocentric view does not promote sustainable practice. It simply suggests that a resource should provide some societal benefit (Lackey 1998, Kapoor 2001). It is this viewpoint around which modern management practices are often developed, where benefits may be tangible (e.g. economic gain) or intangible (e.g. protection of an endangered species) (Lackey 1998). In reference to the Sturgeon

River bison population, management of the societal concerns for the herd should take an anthropocentric viewpoint, with a focus on promotion and encouragement of social and economic benefits.

Two of Grumbine's (!994, 1997) principles of ecosystem-based management contribute to this anthropocentric viewpoint. The first principle states that it *should occur in a hierarchical context,* where managers are not concerned with only one level of the biodiversity hierarchy (genes, species, populations, ecosystems, landscapes) but instead with the interconnectedness among the various levels by integrating science with policy, politics and cultural adaptation (Grumbine 1994, Grumbine 1997, Cortner et al. 1998). This suggests that conservation objectives should incorporate the interconnectedness among different levels of biodiversity hierarchy and the roles of science, politics and culture.

The second principle that contributes to the anthropocentric viewpoint is the idea of *humans embedded in nature,* a perspective that requires a shift from the historic view of humanities' role in nature (Grumbine 1994). Traditionally, nature has been viewed as something separate from human society (Grumbine 1994, Lackey 1998, Hull 2000). Hull (2000) comments that nature derives its value because of this very reason. Nature is 'undisturbed' and 'original'. It has always existed and will continue to do so providing humans do not interfere (Hull 2000). The flaw with this viewpoint is that it does not recognize that humans are part of nature. Our past actions and inactions have had an influence on the ecological systems that exist today, and will continue to do so into the future. The reverse is also true. The environment has had an influence on the development of human society and will continue to do so, as can be seen in numerous

examples surrounding natural resources. If managers continue to ignore this direct relationship then any management process is destined to failure.

Successful collaborative management requires a plan with clear objectives, which emphasizes the importance of community identity and the expression of diverse interests (Michaels et al. 2001). Often communities are assumed to be of one thought, as opposed to being a conglomeration of different values and beliefs. When outside stakeholders become involved, these conflicts of values can become intensified, as one side may be seen as preventing progress (Borrini-Feyerabend 1996). The stakeholders concerned with any resource/environmental management problem are multi-scale, involving local, provincial and federal interests and thus there is a variety of interests that could potentially collide. However, one must take care to ensure that through participating in such a process one does not place too much emphasis on social issues, as there is the potential risk that ecological issues will be marginalized. An ecosystem-based management approach would help prevent such marginalization, as it maintains a focus on management which makes ecological conservation a priority, but encourages collaboration among various interested parties when developing objectives (Grumbine 1994).

The principle of ecosystem-based management which emphasizes the importance of *maintaining ecological integrity in management decision-making* provides guidance when developing objectives for a conservation organization (Grumbine 1994, Grumbine 1997). Managing for ecological integrity does not necessitate the exclusion of humans. Conversely, it allows for human use, providing that it facilitates the maintenance of viable populations of native species (including reintroduction), allows for a natural

representation of ecosystem types and transition zones, maintains ecological processes (water filtration, fire, etc.), and is done over a large temporal scale (Noss 1992, Grumbine 1994). That is not to say, however, that ecological integrity is ultimately the deciding factor. Decision-makers need to move away from a biocentric view of nature, recognizing that we are part of the system and thus when managing for ecological integrity we must factor in humans.

Grumbine also states that there must be a *system of data collection, management and distribution* for decision-makers, which is another conservation objective. Decision-makers often complain that they do not have enough data or that the data have gaps (Grumbine 1997). Unfortunately, more often than not, it is not a lack of data that prohibits decision-making but instead it is the inability of decision-makers to access it (Grumbine 1997). Access to research does not just imply the ability for one to actually get copies of reports and papers. These documents are useless if they are given in a format that is not understandable. Science is simply a tool for decision-making and should be understood by all involved (Borrini-Feyerabend 1996, Grumbine 1997, Cortner et al. 1998, Lackey 1998, Venter and Breen 1998, Borrini-Feyerabend 1999, Kapoor 2001, Lane 2001, Ludwig 2001, Eagles 2002).

Grumbine has also identified the following five goals of ecosystem-based management, which are widely cited and accepted in the literature and provide clear conservation objectives for ecosystem-based management practitioners (Slocombe and Dearden 2002): (1) the maintenance of viable populations of all native species in situ, (2) the representation of native ecosystem types across natural ranges of variation, (3) the maintenance of evolutionary and ecological processes, (4) manage over long enough

periods of time to maintain the evolutionary potential of species and ecosystems, and (5) the accommodation of human use and occupancy within these constraints.

Structure and Governance

Ecosystem-based management provides a number of principles which can be applied to structure and governance, one of which is based on the idea that *borders and boundaries are politically and socially defined*. (Grumbine 1994, Grumbine 1997, Cortner et al. 1998). Consequently, they often do not coincide with ecological boundaries and thus a situation of multiple jurisdictions over natural resources arises and as a result a number of different attitudes, opinions, and ideas exists. Furthermore, a variety of scholars has attempted to define collaborative management based on a number of characteristics. Ludwig (2001, pg 762) states that collaborative management is "a system of direct participatory democracy." This statement does not actively promote consensus based decision-making but instead promotes the idea of participation and decision-making based on a democratic approach, which can be fundamentally summarized as 'the majority rules'. Conversely, Kapoor (2001) stresses the importance of building consensus for decision-making, recognizing that the trade-off is have the time to accommodate a slow process that requires a great commitment. Kapoor (2001) continues to point out that while consensus is important, single permanent decision-making should be avoided. Instead, he suggests a system of temporary or multiple consensus, as such an approach helps prevent irreversible decisions being made and ensures that all stakeholders are involved throughout the entire process (Kapoor 2001)..

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Decision-making should also be decentralized and community-oriented as any measures initiated will likely have an impact on local communities (Kapoor 2001). There is a common misconception that all communities are uniform in their values and beliefs (Hull 2000). In reality this is not the case. It is common for communities to have divergent opinions and values regarding issues which may lead to conflict, which is compounded when external bodies become involved (Borrini-Feyerabend 1996) . Thus, collaboration should work to establish a shared history between stakeholders, as this identifies often-overlooked linkages that have existed for generations, and give a basis for conflict resolution (Hull 2000) or possibly continued conflict. It is important to note here that the primary catalysts for these processes tend to be enthusiastic individuals, either public or private, who often work above and beyond what is required (Borrini-Feyerabend 1996). Without such people most collaborative processes do not survive past the conceptualization stage.

Another principle of ecosystem-based management related to decision-making is in regards to the *inclusion of values in decision-making* (Grumbine 1994, Grumbine 1997). While this principle also reflects an anthropocentric view point, as was discussed earlier, it is included in this section because it contributes to the structure and governance of ecosystem-based management.

The justification for the inclusion of values is summarized quite well through three central laws of resource management, described by William Burch in Grumbine (1997, pg 46) and are as follows:

1. All resource allocation decisions are matters of political struggle rather than technical facts.

2. Resource management decisions are about use, therefore they are decisions about manipulating human behaviour rather than physical things.

3. Resource managers, when confronted with social value decisions, will seek to convert them into technical decisions.

From these central laws it can be stated that ultimately, science is not the primary driver behind resource management decisions. It is societal values that drive decision-making. It should also be noted that values are not uniform within communities or between different organizations and may sometimes lead to conflict (Borrini-Feyerabend 1996). These conflicts can become compounded when external organizations become involved (Borrini-Feyerabend 1996). The best means to overcome these conflicts is to find areas of shared common history and values to use as a building point for relationships (Hull 2000).

A system of decision-making based on consensus, including the participation of an accurate and fair representation of local people and other interested parties, may be used in an effort to create a collaborative process. Such a process ought to be holistic in its view, ensuring it accounts for the differences in capacities and willingness to participate that are the product of the diverse ethnicities, class, caste, age, gender, religion and economic and social status (Borrini-Feyerabend 1996).

Another of Grumbine's (1997) principles recognizes the significance of *interagency cooperation*. The need for cooperation among various parties (including public and private interests) results from having to manage at an ecosystem scale. Working at such a scale results in a mosaic of multiple land use jurisdictions (Grumbine 1994). In order for cooperation to occur, there are two factors that must be met. First, all interested parties

must be involved from the beginning and included in defining the problems to be addressed (Westley 1995). Second, true cooperation involves the sharing of power amongst all interested parties (Westley 1995). This is often one of the biggest barriers towards collaborative efforts, as many organizations are unwilling, or unable, to share control over resources which fall within their area of jurisdiction (Cortner et al. 1998). This problem is compounded by the fact that even when there is a willingness to share power there is often an imbalance, perceived or otherwise, that results from the various types of relationships that exist outside the management organization (Schusler et al. 2003). For example, members of a management organization may be related, or one member may have authority over another in the form of an employer. Grumbine (1997) suggests a number of ways in which these power imbalances can be addressed and these are summarized in Table 2.1;

Table 2.1: Techniques for encouraging interagency cooperation (Grumbine 1997).

Be aware that everyone has something to gain and/or lose and consequently will be working to maximize gain and minimize loss. Open discussion on this is encouraged.
Use a facilitator not a traditional chairperson to run meetings.
Understand that professionals might not have all the answers and they should be encouraged to admit when they do not know something.
Allow for the development of interpersonal communication skills, including giving and receiving feedback.
Keep the number of participants small, as large groups become cumbersome.
Understand that cooperation needs to exist over the long term, and relationships should be structured to be intergenerational and not dependent on specific individuals participating.

Grumbine (1994) also recommends that conservation organizations be approaching decision-making through an *adaptive management philosophy*. Adaptive management can be defined as a "continuous experiment where incorporating the results of previous actions allows managers to remain flexible and adapt to uncertainty"

(Grumbine 1997, p. 45). Adaptive management can be approached through three separate processes: evolutionary, passive, or active (Walters and Holling 1990). The evolutionary approach occurs when initial decisions are made with little data while future decisions are made from better information and lead to better results (Walters and Holling 1990). The passive approach involves creating a single model based on historical data available for each time a decision is made, with the assumption that this model is correct (Walters and Holling 1990). The active approach involves using historical data available at the time to create a number of alternative strategies. The strategy that is used is typically the one that gives the best balance of short term performance and long term value. Grumbine (1997, pg 45) suggests the following rules be remembered when using an adaptive approach:

1. Management problems are complex and multifaceted and should be approached so. Decisions should not be based on a single factor.

2. Quick fix solutions rarely, if ever, exist. Effective management takes time and effort.

3. Timing is everything. Be aware of cycles of change and implement strategies when they have the best chance at success.

4. Monitoring is fundamental towards evaluating the success or failure of a decision. Without monitoring managers are unable to adapt to changes.

5. The use of multiple, smaller experiments often work better than one big experiment. This allows for a precautionary approach to management.

6. Decentralized partnerships between agencies are better than a centralized approach.

A final principle of ecosystem-based management is perhaps one of the most difficult to follow, as it requires *internal organizational change and the establishment of good relationships* between resource agencies and the public (Grumbine 1994, Cortner et al. 1998). This change must occur for effective ecosystem-based management, for three basic reasons (Grumbine 1997). First, ecosystem-based management often requires a change in goals and thus, ultimately, requires a change in an organization's structure and policies. Second, bureaucracies have been established to meet specific needs and thus are not flexible to change. Third, ecosystems are not the predictable systems they were thought to be, but are instead incredibly complex. Traditional institutions have worked on the assumption of nature being predictable and consequently are unable to deal with modern ideas (Grumbine 1997). One of the greatest barriers to organizational change is trust (Cortner et al. 1998) There is often a lack of trust between organizations due to their histories, which must be overcome for successful collaboration (Cortner et al. 1998). Partnerships must be open, honest and transparent. Once a member begins to hide information, the collaborative management process has failed (Borrini-Feyerabend et al. 2000).

Collaborative and ecosystem-based management needs access to a large number of resources, including funding. Organizational stakeholders, including the government, Non-governmental organizations (NGOs), and large corporations can often provide some funding. These organizations typically have access to the resources needed to meet the logistical costs of the plan. However, organizations should not use this as leverage over other stakeholders to take control of the process and direct it (Borrini-Feyerabend et al. 2000). This is not to say that the funding organizations should not expect that the

outcomes are favorable to them, otherwise it will be difficult for such organizations to justify the funding. This however can pose another problem in that funding may end up ultimately influencing the direction an organization takes. If the direction an organization wants to move in is contrary to that of the funders, then funding may be cut.

Collaboration may help reduce many of the problems that arise from top-down management and individualistic (either in the literal or organizational sense) approaches. Organizations often promote conformity, requiring members to go with the status quo to participate, eliminating an individual's ability to speak out. In addition, many organizations also perpetuate adversity and inequity in a variety of forms (Pretty and Smith 2004). For example, some organizations require extensive membership fees, thereby preventing poorer individuals from joining. It should be noted that some collaborative management arrangements are not necessarily free from marginalization and consequently special care must be given to avoid it (Agarwal 2001).

Collaboration is not a guaranteed process. Outcomes using collaborative management are not certain because stakeholders may be unwilling to participate in more than an advisory role, while in a true collaborative management approach, stakeholders should play an active role by being fully included in discussions and decision-making . Conversely, government must also be willing to give up some degree of control to the stakeholders (Schusler et al. 2003). To accomplish this, the benefits of a collaborative approach must be made clear to all stakeholders (Borrini-Feyerabend et al. 2000).

Potential Benefits

Collaborative processes can potentially provide a wide array of benefits including the reduction of negative social and cultural impacts arising from certain management measures (Lane 2001). Collaboration between various groups can also result in an economic benefit to one or more stakeholder groups. This occurs in a variety of ways, including for example, the creation of new economic opportunities and sharing the cost of a project (Lane 2001). Another benefit of these processes is that they often increase management effectiveness and acceptability, enhance understanding of natural and human systems and most importantly establish trust between all participants (Schusler et al. 2003).

Collaborative processes also help develop environmental stewardship, which Brown and Mitchell (1999, pg 173) define as "efforts to create, nurture and enable responsibility in landowners and resource users to manage and protect land and natural resources". This is achieved by giving responsibilities to those who will be most affected by any changes in a resource (Brown and Mitchell 1999). Examples of stewardship include voluntarily restricting damaging activities, replacing exotic plants with native ones, participating in wildlife monitoring, educational program and collective restoration (Dempsey et al. 2002). This responsibility promotes feelings of pride and satisfaction with positive outcomes. Conversely, feelings of disappointment may result if an outcome is unsuccessful (Hull 2000). It must be remembered, however, that these outcomes are rarely permanent and that collaborative processes must endure the test of time, involving continuous evaluation and adaptation to changes (Brown and Mitchell 1999). Thus, if an outcome is negative and people are disappointed, participants should be encouraged to

view it as a learning process in which mistakes may happen. For this reason and as stated earlier, it must be stressed that decision-making which results in permanent outcomes should be avoided for effective resource management (Kapoor 2001).

Potential Constraints

Collaborative management is not without risk, including that of unintended outcomes (Cortner et al. 1998). Monitoring and re-evaluation of objectives, goals, and processes is needed to ensure that programs are meeting the needs and wants of stakeholders (Margerum 2001). Another risk is dominance by one, or a collective of, participants (Borrini-Feyerabend et al. 2000, Margerum 2001, Schusler et al. 2003). This is particularly true when some participants are able to make a more direct contribution to a program, such as providing the capital with which to proceed. In this instance, effective collaboration requires participants to be willing to cooperate with each other, and agree not to use leverage to get what they want (Borrini-Feyerabend et al. 2000, Kapoor 2001, Schusler et al. 2003).

Lack of commitment is also a risk in these processes (Borrini-Feyerabend et al. 2000, Margerum 2001). Without government commitment it is not possible to change programs, policies and actions which severely limits management options (Margerum 2001). A lack of commitment from other stakeholders can have just as significant an impact as that of government and thus should not be overlooked.

It is important to note that when attempting to elicit commitment from various stakeholders; those implementing the project should not limit themselves to using just

one technique. A combination of strategies should be employed, in order to gain commitment from a wide spectrum of society based on the socio-economic differences between stakeholder groups. Furthermore, these are not the only options that are available to instill commitment. If it is found that a project is unable to acquire an acceptable amount of commitment from stakeholders, then the search question may have to be broadened so that it encompasses a greater scope of concerns (Schusler et al. 2003).

Once commitment is gained, managers must work to ensure that it is maintained for the long-term. Promises must be kept and policies developed by the collaborative process, otherwise there is a tendency for stakeholders to revert back to old practices (Pretty and Smith 2004). One means of ensuring maintained commitment is to demonstrate that a collective approach is more beneficial than that of an individualistic approach (Pretty and Smith 2004). If this is not the case then there is little incentive for stakeholders to participate in a process that is possibly detrimental to their livelihood. Another means to ensure commitment is to put the decision-making power into the hands of the people (Curtis 1998). A sense of responsibility reduces the likelihood of project abandonment. Stakeholders like to feel needed and empowerment promotes such feelings. Such an approach can be described as bottom-up management (Curtis 1998). Interestingly, however, it is often the case that top-down efforts are required, from government or other administrators, to promote bottom-up management (Curtis 1998).

Building Institutions

Cortner *et al* (1998) defines two types of institutions found in natural resource management. Formal institutions are administrative structures, such as government agencies or NGOs, as well as laws, regulations and formalized activities (Cortner et al. 1998). Conversely, informal institutions are described as a particular set of customs or practices (Cortner et al. 1998). Both types of institutions are important for establishing conservation initiatives, where formal institutions administer the initiative and informal institutions encourage participation and establish collaborative efforts.

Institutions, as mentioned earlier, are the product of societal values and as such can be used to conceptualize social and socio-environmental interactions (Cortner et al. 1998, Smith and McDonough 2001). Unfortunately, the societal values upon which institutions are based are often outdated and as such may not truly reflect or represent current values. Consequently, there is growing dissatisfaction with many current institutions. Not only do they misrepresent societal values, but they are also inflexible in their ability to adapt to changing circumstances, narrow minded in their approaches to decision-making, hierarchical, and focused on producing visible results as fast as possible (Cortner et al. 1998).

Agencies are often overly protective of their jurisdictions and unwilling or uncomfortable in working with other organizations in a collaborative manner due to power issues (Cortner et al. 1998). Such attitudes are detrimental to effective conservation initiatives, as the interconnectedness of resources and society requires cooperation and bottom-up management practices. Organizations must be flexible and

multifaceted, with all members willing to equitably share power and accountability (Cortner et al. 1998, Dudley et al. 1999a, Borrini-Feyerabend et al. 2000).

Institutions need not be created by the government, however linkages to government agencies either through public policy, sharing of resources, or involving the government as a stakeholder are desirable (Kapoor 2001). Such partnerships are very effective as they tend to have support from most, if not all, the major stakeholders and thus there will be little opposition to decisions. Furthermore, permanent institutions, with legal recognition, provide a basis for the assurance of "conservation in perpetuity" (Brown and Mitchell 1999). However, such partnerships often require longer periods to come to a decision, and may create an institution that becomes an administrative debacle (Borrini-Feyerabend et al. 2000).

Analyzing existing institutions can be useful in providing important fundamentals for establishing the framework for new institutions. For example, current institutions give insight into what is required from a resource manager who works for the institution, either in a literal or symbolic sense, including educating stakeholders and the public, mitigating or facilitating conflicts, or fulfilling a scientific role (Cortner et al. 1998). Defining what the terms of reference may be for decision-makers is important for developing institutions because without a clear understanding of expectations, managers cannot effectively take a project in the desired direction.

Protected Areas Management in Canada

Historically, Canadian National Parks were established to protect and promote a natural phenomenon that would appear attractive to Canadians, with little concern given

to how these parks are linked to their surroundings (Eagles 2002). In fact, from the 1960's to 1980's, maps detailing park boundaries left areas outside a park blank (Dempsey et al. 2002). However, during the past 30 years, park planners and managers have begun to recognize that parks do not exist independently and have given greater recognition to the cultural, ecological and economic connections that exist between the parks and their surroundings (Slocombe and Dearden 2002). Furthermore, the Panel on the Ecological Integrity of Canada's National Parks declared that "many national Parks are experiencing difficulties in maintaining ecosystems in established areas" (Dempsey et al. 2002). As a result, park managers have shifted to a more holistic style of management in which the concern is on biophysical rather than administrative boundaries, termed ecosystem-based management (Slocombe and Dearden 2002). This means that park managers must learn to work with private landowners, especially those with land adjacent to parks. Little literature currently exists on management across the private/public interface.

Conclusion

This chapter reviewed the relevant literature towards creating a framework for plains bison conservation around PANP. The topics covered provide knowledge to critically analyze the complexity of plains bison management. The principles and goals of collaborative and ecosystem-based management stress the importance of viewing protected areas as only a part of the landscape needed to sustain wildlife populations (Theberge and Theberge 2002). Consequently, decision-makers must include various

interested parties into the planning process. Unfortunately, such collaborative approach often poses challenges as it may require voluntary restrictions of resource use from the private landowners, it is resource intensive and it is hard to gain and maintain commitment from all interested parties.

This review of the literature identified several themes that form the fundamental characteristics of collaborative and ecosystem-based management. First, the goals and objectives should be defined by the stakeholders through participatory processes, not by an administration. Second, a multidisciplinary approach should be used, where science is used as a tool. Third, it must operate with short, medium and long-term goals, and include local and national perspectives. Fourth, collaborative decision-making should strive towards adaptable institutions that advance the goals and objectives defined earlier.

Collaborative and ecosystem-based approaches to resource management, as discussed, have the potential to be of great use in the development of a community-based organization for plains bison conservation in central Saskatchewan in striving towards meaningful stakeholder involvement, transparency in decision-making, power-sharing and consensus-based decision-making.

3.

KEY PROCESSES FOR COLLABORATIVE WILDLIFE CONSERVATION INITIATIVES

Introduction

Historically, a variety of approaches has been proposed for collaborative cross-boundary wildlife management, particularly regarding protected areas (Brown and Mitchell 1999). These approaches to management came in response to the growing recognition that conservation strategies are most effective when they operate at the landscape level and employ processes which include local representation and participation (Brown and Mitchell 1999). Lane (2001) suggests that designing conservation strategies in this fashion would help address the socio-cultural, ecological and political challenges unique to each region. Collaboration is not without its difficulties, with issues of commitment to participation and equality in decision-making being some of the principle obstacles (Margerum 2001). This chapter will investigate how different conservation initiatives have approached the management of free-ranging herbivores in and around protected areas with specific focus on their approaches to collaboration and organizational structure. The information collected here will help conceptualize how a similar organization could be structured and operate for the conservation of the Sturgeon River plains bison herd in central Saskatchewan.

There has been a number of publications and conferences surrounding parks and protected areas management, stressing the importance of working at the landscape level. The central theme derived from these publications is that managers must work in collaboration with other jurisdictions and individuals in order to maintain the ecological

integrity of parks and protected areas (Cortner et al. 1998, Borrini-Feyerabend 1999, Brown and Mitchell 1999, Dudley et al. 1999b, Kapoor 2001, Lane 2001, Dempsey et al. 2002, Rollins and Robinson 2002, Slocombe and Dearden 2002).

Collaboration, when correctly executed, offers a number of benefits to participants, beginning with the reduction of the negative social and cultural impacts of decisions by allowing those affected to have a voice (Lane 2001). Furthermore, collaboration facilitates the sharing of resources and expertise, thereby allowing for more efficient use of resources (Borrini-Feyerabend et al. 2000). In addition, the complications and problems stemming from traditional top-down management approaches, including disempowerment and loss of identity, can be mitigated through collaborative processes (Smith and McDonough 2001). Finally, collaborative processes increase effectiveness by enhancing the acceptability of initiatives, facilitating mutual understanding of issues, fostering a sense of environmental stewardship, and establishing trust (Brown and Mitchell 1999, Schusler et al. 2003).

Collaboration is not a simple, consequence-free solution to resource management across jurisdictions. It can often lead to unintended and unforeseen outcomes, and projects must be carefully monitored to ensure that they do not stray far from the stated objectives (Margerum 2001). There is a risk that one, or a combination of interests may take a dominating role and marginalize the voice of other participants (Borrini-Feyerabend et al. 2000, Margerum 2001, Schusler et al. 2003). Furthermore, another risk when collaborating lies in the difficulty of gaining commitment from the various involved parties (Borrini-Feyerabend et al. 2000, Margerum 2001, Schusler et al. 2003) and without commitment from key individuals, it is highly unlikely that a collaborative

process will be successful (Margerum 2001). Although there are numerous other challenges associated with collaborative management, the foremost aspect of collaboration that will be discussed here focuses on the willingness of organizations to relinquish some level of control in order to allow other partners to contribute significantly (Curtis 1998).

Methods

For this research, a case study approach involving four different cases was used. This approach was selected because it allows for learning from multiple experiences. In addition, by using multiple cases, a comparison of wildlife management practices can be made from different contexts and thus provide a more complete perspective (Yin 2003). In conducting the review of these case studies, the focus was placed on 1) the structure and governance of each organization, 2) conservation objectives and 3) benefits of the collaborative approach and remaining challenges. The case studies were selected based on three main criteria: 1) the management of large, wide-ranging herbivores in North America, 2) the involvement of a protected area, and 3) management issues at the public land/private land interface. How each of these case studies met these criteria is outlined in Table 3.1. The wide-range characteristic of plains bison is a fundamental difficulty in managing the Sturgeon River herd. Furthermore, the existence of a protected area in a region can significantly change how a landscape is used by the introduction of a different set of rules and regulations. Finally, most of the disputes concerning the Sturgeon River herd have occurred with regard to areas where private land borders PANP, and therefore

the use of examples where this interface exists is integral for making recommendations for bison conservation around the park.

Table 3.1: Evidence for case study selection based on four criteria

	Herbivore Involved	Protected Area	Evidence of Private/public Interface	References
Big Horn in Our Backyard	Big Horn Sheep *(Ovis Canadensis)*	Kootenay National Park (KNP)	City of Radium Hot Springs, B.C. is adjacent to KNP and in the big horns habitat range	(Swan 2004, Dibb 2006)
Buffalo Field Campaign	Plains bison *(Bison bison bison)*	Yellowstone National Park	Areas of private ownership found around the park, particularly on the west side, where bison migrate.	(Buffalo Field Campaign 2006)
Chitek Lake Wood Bison Management Committee	Wood bison *(Bison bison athabascae)*	Chitek Lake Park Reserve	Park Reserve is found within the traditional territories of Skownan First Nation	(Collins 2006, Manitoba Conservation n.d.)
Catalina Island Conservancy	'American' Bison *(Bison bison)*	Protected through private deed	88% of the island is protected, the rest is privately owned	(Catalina Island Conservancy 2006)

The approach Yantz (2005) used in her research helped develop the criteria for assessing the case studies. This includes five basic questions: 1) what parties are involved in setting up the organization, 2) what is the organization's objective(s), 3) what is the structure and how it is governed, 4) what successful initiatives has it undertaken, and 5) what challenges has it faced. In order to answer these questions, I reviewed all accessible documents including web-sites, newsletters, minutes and reports. For information which could not be found in written documents, I contacted members of each of these initiatives.

Results

Table 3.2 clearly indicates that while there are similarities among cases, each initiative has developed in a very different manner. The following analysis highlights the elements of partnerships, conservation objectives and governance. It will also detail some

of the successes of each case study along with some of the challenges from which lessons can be learned.

Case Study Partnerships, Conservation Objectives and Governance

The trend in governance from the review of these cases is that each organization is governed by a management committee with representation from various interest groups (Table 3.2). The influence of these committees differs from case to case. With the Chitek Lake Wood Bison Management Committee, the committee meets to discuss the status of the herd and what initiatives can be expected for the coming year. This committee is composed of representatives from Chitek Lake First Nation, Manitoba Conservation and Agriculture Canada. In contrast, Big Horn in Our Backyard is ultimately controlled by the decisions of two organizations, Osprey Communications and Parks Canada, as they have complete control of the funding available. These two organizations take input from an interagency management committee but are under no obligation to follow through on suggestions (Dibb 2006). The Catalina Island Conservancy (CIC) approaches governance from a different angle. Its decision-making body does not include any local people, but it instead has departmental representatives whose role it is to represent different perspectives including local landowners, NGOs, researchers, and others (Catalina Island Conservancy 2006).

The range of participants across these case studies is quite extensive. With regards to the CIC, bison management decisions were made without public input until recently. The conservancy has recognized that they must move away from top-down approaches

and instead work with local people. Consequently, the CIC has begun to host 'conservancy councils' which are composed of local people who stand to be impacted by management decisions. For example, with regard to decisions concerning bison on the island, only those who would be impacted by any decision are consulted in a forum facilitated by CIC staff. In the other three cases, local participant involvement is integral to the operation of the organization. Without the support of community members, none of these three projects would have any success or permanence (Borrini-Feyerabend 1996).

The Buffalo Field Campaign differs in that there is no government involvement within the organization. In contrast, the other three organizations have significant government involvement, some to the point of ultimate control. As a result, input from the Buffalo Field Campaign is not included in government management plans. Instead, government policies regarding bison are to ensure the protection of local livestock from disease, thus protecting the livelihoods of local ranchers. Since January 1st 2006, current policies have resulted in the culling of 1011 bison as the animals ventured outside the boundaries of Yellowstone National Park (Buffalo Field Campaign 2006). This practice is frustrating for the Buffalo Field Campaign as it is against its core beliefs of environmental stewardship and conservation.

The conservation objectives of each organization are also the product of the local social, cultural and environmental climate and consequently each have different goals. The Buffalo Field Campaign is concerned with conserving free-ranging bison because of its cultural value, specifically for Aboriginal people. Conversely, Big Horn in Our

Table 3.2: Analysis of four wildlife management case studies for conservation objectives, structure and governance, successful initiatives and remaining challenges.

Case Studies	Partners	Objective	Structure and Governance	Successful Initiatives	Challenges	References
Bighorn in Our Backyard	Private land owners, local volunteers, Parks Canada	Highlight the needs of wild Bighorn Sheep of the Radium-Stoddart herd and bring to light the unique challenges and opportunities that this human-wildlife relationship presents to both people and Bighorn Sheep.	There is an Interagency Big Horn Sheep Management group which gives guidance for future initiatives. However, Parks Canada and Osprey Consulting have final say.	Community-based monitoring, collaring program, and habitat restoration of a 240 ha area.	Complex mosaic of jurisdictions including private land, protected areas and crown land. Increasing in complexity due to increasing cottage development on sheep winter range.	(Dibb 2006) (Swan 2004)
Buffalo Field Campaign	Local landowners, American Native Communities, national and international volunteers	To stop the slaughter of Yellowstone's wild buffalo herd, protect the natural habitat of wild free-roaming buffalo and native wildlife, and to work with people of all Nations to honor the sacredness of the wild buffalo.	A management board responsible for funding and strategy decisions. However, team coordinators and volunteers make decisions in the field regarding day to day operations. Decisions are all based on consensus.	Establishment of buffalo safe zones outside the Park, fence repair service, and daily monitoring rounds	Not included in the development of an interagency bison management plan. Government only facilitates public participation to meet the basic standard.	(Buffalo Field Campaign 2006)
Chitek Lake Wood Bison Mgmt Committee	Skownan First Nation, Manitoba Conservation, Agriculture Canada	To create a long term management plain for Manitoba's only free-ranging wood bison herd though the creation of a protected areas network	A management board where the chair is alternated between the Band Chief and Manitoba Conservation. All decisions are made through a majority vote.	The creation of the Chitek Lake Park Preserve, which encompass a large portion of the bison's range.	Lack of funding. As they currently only have a budget of $1500 for the management and monitoring of the herd.	(Collins 2006, Manitoba Conservation n.d.)
Catalina Island Conservancy	Catalina Island Conservancy staff, local volunteers	To be a responsible steward of its lands through a balance of conservation, education and recreation.	A board composed of members of different departments representing ecological, cultural and economic interests. They are also in the process of creating conservancy councils with community.	Establishment and maintenance of population limit of 200. They also, worked in partnership with Rosebud Indian Reservation and Morongo Band of Mission Indians and NGOs to transplant bison to be repatriated.	More science is needed and a comprehensive management plan must be developed.	(Catalina Island Conservancy 2006)

Backyard is more focused on the protection of big horn sheep for reasons of environmental stewardship and potential economic benefits. The Chitek Lake Bison Management Committee resembles a combination of these two groups, as it is concerned not only with the bison from a cultural perspective, but from an economic and environmental stewardship perspective. The CIC also reflects this combination of values. Since bison are not a native species to the island, the cultural relevance of the herd is slightly different. Table 3.2 does not suggest that some objectives are better than others. Instead it demonstrates that managers must be aware of the different values which exist within any region when attempting to develop a management plan. Consequently, no two cases are alike and management objectives are developed accordingly.

Success of Management Initiatives

Big Horn in Our Backyard (BIOB)

Big Horn in Our Backyard has established itself over the past nine years, building on numerous successes. Among others, BIOB has successfully led a community monitoring program which consists of volunteers who collect data on movement, health, and behaviour of big horn sheep (Swan 2004). This is an annual occurrence and has provided useful information to managers, as well as facilitated educational efforts within the community (Swan 2004). BIOB has also been active in conducting research projects including the collaring of ten big horn sheep in 2000 in order to determine their seasonal range, migration corridors, location of critical habitat elements, and their response to human disturbances (Dibb 2006). This information was then used by the BIOB

management board to make decisions regarding big horn sheep conservation, and was conveyed to local communities in the quarterly newsletter titled BIOB Beat.

A final example of BIOB to be discussed is their efforts in promoting habitat restoration in the region. They have been able to restore approximately 200 hectares of winter habitat out of an estimated 2 000 hectares of sheep winter range (area calculated from a 95% fixed kernel density function from sheep telemetry points). BIOB has also established a Land Stewards program where landowners can invoke the services of professionals to restore their land to the natural forests and grasses of the region. This not only promotes big horn conservation, but also provides other benefits such as fire prevention (Swan 2004).

Buffalo Field Campaign (BFC)

While the Buffalo Field Campaign does not enjoy the benefits of working in partnership with government, it has had a number of successes, primarily resulting from partnerships between aboriginal communities, other local landowners, and numerous volunteers. BFC has been able to create a very successful monitoring program with which they not only monitor bison movement, but also document actions taken against bison (Buffalo Field Campaign 2006). This monitoring program is done on a volunteer basis and is conducted year round. It is perhaps their biggest success as it requires an immense amount of resources, particularly in the form of volunteers.

Another successful venture that BFC has had is in establishing "Buffalo Safe Zones" (Buffalo Field Campaign 2006). These zones are essentially private land around Yellowstone National Park where the residents have allowed signs to be posted on their

land, designating these areas as no kill zones. The signs prohibit people from killing bison that are found in these areas, thereby giving additional protection for the herd (Buffalo Field Campaign 2006).

A third success of BFC is in the establishment of a fence repair service. This service is provided, regardless of whether the damage is done by bison or other wildlife (Buffalo Field Campaign 2006). Infrastructure damages can be particularly frustrating for landowners, as not only is it costly and time consuming, but it can create conflicts between neighbours if livestock escapes onto other fields. This service, which is staffed by volunteers, is essential in limiting potential conflicts and promoting cooperation.

Chitek Lake Bison Management Committee (CLBMC)

The CLBMC has had two big successes since its establishment. Manitoba Conservation identifies the ten-fold increase in herd size since its establishment as the biggest success of the CLBMC (Collins 2006, Manitoba Conservation n.d.). Wood bison are listed as threatened under the Species at Risk Act (Government of Canada 2003) and this ten-fold increase in a free-ranging herd is a significant step in the species recovery.

The second major success of the CLBMC is the establishment of the Chitek Lake Park Reserve (Government of Canada 2003). The Park Reserve covers an area of 100 to 300 hectares, all of which is part of the bison herds home range (Collins 2006, Manitoba Conservation n.d.). This region is also home to white-tailed deer *(Odocoileus virginianus)*, elk *(Cervus Canadensis)*, moose *(Alces alces)*, and woodland caribou *(Rangifer tarandus caribou)*; a rare occurrence in Manitoba. The Park Reserve was established by the CLBMC through a process of local consultations, with the ultimate goal of making this

area part of a network of protected areas in the region (Collins 2006, Manitoba Conservation n.d.).

Catalina Island Conservancy (CIC)

According to the conservation office of the Catalina Island Conservancy, their biggest achievement regarding bison management was in agreeing to establish and maintain a maximum population of 200 individuals, based on carrying capacity and socio-economic factors (Catalina Island Conservancy 2006). The population is currently kept at a lower density of approximately 150 to 175 individuals (Catalina Island Conservancy 2006). How this target number of bison would be maintained was initially a contentious issue, as members of the local community and NGOs worried that surplus animals would be auctioned off and sold for slaughter (Catalina Island Conservancy 2006). In response to this, the CIC entered into an agreement to have surplus bison corralled and shipped live to a reserve in South Dakota where they would be released and used in a way that reflects the cultural traditions of the Rosebud Indian Reserve. This agreement was reached in through a partnership with the Rosebud Indian Reserve in South Dakota and the Morongo Band of Mission Indians in California, the latter of which provided the funding to cover shipping costs (Catalina Island Conservancy 2006).

Challenges

Despite the tight criteria used to select these case studies, each is different and a product of a combination of factors that produce unique situations. The response to

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these situations in turn partially drives how these organizations have evolved, and continue to evolve in relation to short and long-term strategies.

Big Horn in Our Backyard (BIOB)

The biggest challenges faced by BIOB is the ever-increasing amount of development that is occurring in the Columbia Valley (Dibb 2006). Much of this development is from people purchasing second homes, or 'cottages,' where they spend a portion of their time (Dibb 2006). Unfortunately, much of the land that is being purchased for these developments is land that is prime big horn winter habitat (Dibb 2006). Consequently, this results in a decrease in the amount of habitat that is available for restoration efforts by BIOB. It should be noted however, that BIOB has had some success at reducing the footprint of these developments through agreements with landowners. Despite this, securing habitat remains far from satisfactory (Dibb 2006).

Buffalo Field Campaign (BFC)

The Buffalo Field Campaign's greatest challenge is the ability to work with government to develope a management plan that is acceptable to the BFC. In 2000, a document titled <u>Record of Decision for Final Environmental Impact Statement and Bison Management Plan for the State of Montana and Yellowstone National Park</u> was released (United States Government 2000). This document is the product of interagency cooperation between the National Parks Service, U.S. Forest Service and the Animal and Plant Health Inspection Service (United States Government 2000). The BFC was not involved in the decision-making process and consequently it is critical of the bison

management plan as it is in conflict with the values of their organization (Buffalo Field Campaign 2006). This has resulted in a variety of conflicts between BFC and the government, particularly in the form of non-violent civil disobedience (Buffalo Field Campaign 2006). The BFC hopes that in time they will be able to work with government departments for the effective long-term management of the herd (Buffalo Field Campaign 2006).

Chitek Lake Bison Management Committee

The CLBMC has had numerous successes; however it does face one considerable challenge. Currently the CLBMC has a budget of only $1,500 per year with which it must do all of its management and monitoring activities. This is obviously a huge constraint, as conducting over-flights in order to monitor the herds size essentially drains this budget. This prohibits the CLBMC to engage in any other management or research activities. Despite such economic constraints the CLBMC has had numerous successes (Collins 2006).

Catalina Island Conservancy

The biggest challenge this organization faces is that decision-makers feel that they do no have enough information to make accurate bison management decisions (Catalina Island Conservancy 2006). In particular, the conservation department of the CIC feels that more work needs to be done to assess the impact of the herd on water quality on the island. They feel that they need this information before a comprehensive management plan for the bison can be developed (Catalina Island Conservancy 2006).

Discussion

Out the four case studies reviewed, none facilitated complete community involvement in decision-making. This reflects one of the most significant challenges in collaborative management, namely the devolution of power and control over a resource (Borrini-Feyerabend 1996, Curtis 1998, Carlsson and Berkes 2005). At most, some level of consultation was achieved with the community and input received. However, there was no guarantee that this input would significantly affect decisions. Decision-making power rested ultimately in the hands of a few, primarily government individuals. This failure to truly collaborate may have significant implications in regards to how effective these organizations will be. Without empowering local people in decision-making, these initiatives may have unforeseen social and cultural impacts, leading to additional conflicts and resentment between local people and decision-makers (Borrini-Feyerabend 1996, Lane 2001). This is not to suggest that these examples have not been effective in accomplishing their individual objectives. Instead, these case studies reflect what was feasible in a given context and at a given time. These case studies do not correspond to true collaborative management as there is a lack of meaningful partnership, community views are not clearly understood, and diverse interest groups are not adequately represented. The lack of community involvement may have some repercussions at a later date (Borrini-Feyerabend 1996, Michaels et al. 2001). This is particularly significant for wildlife issues at the interface between public and private lands, where government decision-makers may need accommodations from private landowners to conserve wildlife effectively (Dempsey et al. 2002).

Similar problems such as those listed above exist in other collaborative initiatives on public lands, particularly in the northern regions of Canada. Most northern Canadian National Parks are managed by co-management boards with representation from the Canadian government and local aboriginal group(s) (Weitzner 2000). They have the responsibility to make recommendations on the management and operations of parks including the use of local resources, policy developments, enforcement, training, research, staffing and the protection and management of lands and resources (Weitzner 2000). The legally binding agreements and funding that make such an arrangement possible do not exist in the examples presented in this chapter. In Canada, the Supreme Court and various provincial courts have established the rights of Aboriginal peoples to be involved in decision-making on lands and resources (Yantz 2005). The decisions made by the courts directs government to work with aboriginal communities in order to ensure that treaty rights are respected (Yantz 2005). Despite this direction and as seen in other collaborative initiatives, organizational challenges remain regarding empowerment, trust and the equal distribution of benefits to all involved (Yantz 2005).

While the lack of full community involvement in decision-making is an important finding in terms of challenges for collaboration, these organizations have had a number of successes. Collaboration, even without full community participation, has helped facilitate different mitigation measures and research projects by the sharing of resources, expertise and labour. The Buffalo Field Campaign has worked in cooperation with landowners to create buffalo safe zones on private land. The Catalina Island Conservancy was able to enter into partnerships to transport excess bison to another state, sharing costs with yet another partner. In regards to the Chitek Lake Wood Bison

Management Committee, members of Chitek Lake First Nation are actively involved in monitoring bison movements, reporting their findings to Manitoba Conservation to help with their surveys. These are just a few examples of how partnerships have helped shape wildlife conservation.

Another means of encouraging successful wildlife conservation that is prevalent in these examples is the promotion of wildlife conservation measures that can benefit all partners (Borrini-Feyerabend et al. 2000). By promoting mutual benefits, these organizations have increased the likelihood of initiatives being accepted by communities. For example, the creation of buffalo safe zones benefited both the Buffalo Field Campaign and local landowners. The Buffalo Field Campaign benefits by having privately-owned land operating as a privately-owned protected area, helping protect bison that may otherwise be shot. In return, landowners have volunteers from the Buffalo Field Campaign routinely patrolling their land, monitoring bison locations and ensuring no illegal hunting is happening on their property as well as identifying and repairing fence damage. Promoting the benefits of wildlife conservation therefore helps encourage other people to participate by giving them a direct reason to do so (Borrini-Feyerabend et al. 2000).

Promoting benefits from wildlife can also help encourage a sense of environmental stewardship (Brown and Mitchell 1999, Schusler et al. 2003). If people feel that conservation has some benefit to them they may feel connected and obligated to take responsibility for ensuring the long-term conservation of the species in question (Smith and McDonough 2001). Without this feeling of stewardship it may be difficult to gain long-term commitment from key individuals (Borrini-Feyerabend et al. 2000).

Effective communication between members and partners of these organizations was also shown to be an integral part of any operation. BIOB has developed a quarterly newsletter, the BIOB Beat, which is distributed widely in order to share information, introduce new projects, explain current project development, and future plans and clearly indicate how one can get involved. Communication to members is important because as people become more informed they often become more involved. Education through communication can help build that sense of environmental stewardship previously discussed (Dempsey et al. 2002)

To summarize, the four case studies have provided four key lessons which can be applied in making recommendations towards the conservation objectives and structure and governance of a community-based organization for bison conservation. These lessons are as follows:

Conservation Objectives

1. Collaboration led to better conservation practices and effective management initiatives.

2. Promoting how conservation can benefit individuals is integral in gaining commitment.

Structure and Governance

1. The lack of collaboration is common throughout and is seen as a challenge to be overcome.

2. Effective communication between everyone involved is essential.

Relevance to Sturgeon River Plains Bison Conservation

The Sturgeon River plains bison herd is contentious in the area specifically because of the rapid increase in herd size and continued movement of these animals outside of the park, onto private land. This has led to conflict among Parks Canada, Saskatchewan Environment personnel and private landowners regarding the management of the herd. The case studies discussed in this chapter revealed a number of key attributes to wildlife management across multiple jurisdictions which may be applicable for bison conservation in and around PANP.

The situation around PANP involves multiple jurisdictions and interests. Accordingly, there is a lot of potential for the sharing of resources, expenses and labour. Parks Canada, Saskatchewan Environment, the Saskatchewan Wildlife Federation, local tourism operators and local landowners can all contribute differently to the conservation of bison.

Many of the different interests in the region stand to benefit from conservation of the Sturgeon River herd. Initiatives that will provide benefits to most, if not all, parties will be easier to implement in the region than those that favour a single organization. Ensuring that all involved parties benefit in some capacity is particularly important. Currently local landowners, particularly those living adjacent to the park boundaries, have experienced a disproportionate level of negative impacts from the bison herd. As a result, any initiatives that would not see a benefit, including the reduction of impacts for these landowners, will not be supported.

The importance of effective communication is also important for conservation of the Sturgeon River herd. Due to the complex nature of the region it is important to be

able to keep everyone involved and informed. Through effective communication, people in the region can become more aware of the unique nature of this herd and may develop a deeper appreciation for its existence. This, in turn, can help encourage more people to commit fully to its conservation.

One lesson that should be gained from these case studies is that collaboration requires the meaningful participation of local community members (Borrini-Feyerabend et al. 2000). PANP is bordered by privately-owned land, primarily used for crops and hay production (Bergeson 1992). A number of these landowners have already taken action and have had a number of bison harvested from their land by members of the Ahtahkakoop First Nation (O'Brodovich 2006). If these landowners are not given a meaningful voice in decision-making, then it is highly unlikely that any management strategy developed that requires their cooperation will be supported. Instead, independent actions, such as those previously mentioned, are more likely to occur.

The results of this case study analysis have provided insights into different ways of approaching wildlife management across political boundaries. In particular, it has provided insights into the challenges of wildlife management at the interface between publicly and privately-owned land, an area which is not well discussed in the literature. Although the case studies selected were at the private/public interface, in reality most of the management action focused on public land. The only exception to this is the buffalo safe zones created in partnership between landowners and the BFC. The case of the Sturgeon River plains bison may differ as it is truly at the private/public interface. If effective bison conservation is to occur, understanding the dimensions that exist at this interface is essential. The harvesting of 16 bison in 2005 is an example of private

landowners asserting themselves in a way that was contrary to the goals of the Sturgeon River Plains bison strategy development team. If actions like this are to be prevented in the future than an understanding of the benefits, and how to best promote them, along with the challenges of collaboration at the private/public interface is needed.

4. FRAMEWORK FOR COMMUNITY-BASED CONSERVATION OF PLAINS BISON IN CENTRAL SASKATCHEWAN

Introduction and Objectives

The Sturgeon River herd is the only free-ranging herd of plains bison in their natural historic range in Canada (Frandsen 2004). The herd initially started after an estimated 10 bison moved to the west side of Prince Albert National Park (PANP) in 1969 (Frandsen 2004). Since then, the animals have found adequate habitat and the herd has increased at an annual rate of 10-14% to reach a population of over 400 animals (Fortin et al. 2004, Frandsen 2004, O'Brodovich 2006). Due to its increasing population size and the presence of privately owned land on its range, the management of the Sturgeon River plains bison herd requires collaboration between landowners, provincial and federal authorities. .

The herd's core range is at the southwest corner of PANP and is thus under the jurisdiction of Parks Canada. Surrounding the Park, there are community pastures and a provincial forest as well as privately-owned land which are under Saskatchewan Environment's jurisdiction (Government of Saskatchewan 1998a, b). The bison freely roam within and beyond the Park boundaries and can have significant impacts on infrastructure including fence damage and making wallows, which can damage equipment. There is currently no adequate compensation program to repay costs incurred by farmers and ranchers. Consequently, landowners experiencing damage from bison sometimes feel that insufficient steps were being taken to manage the bison. In 2005, they sought to mitigate the issue by having 20 wandering bison killed that were on their property (O'Brodovich 2006). This action was not well received by many other

interested parties and some public outcry ensued (O'Brodovich 2006). This example clearly indicates how landowners in the region have the ability to self govern their land and the bison herd. This ability reinforces the importance of having federal, provincial, and municipal governments to work with local community members to address management issues if the removal of further animals is to be avoided.

Ecosystem-based management has been identified as a desired approach to managing natural resources with the objective of ensuring that ecological services and resources are not degraded through anthropogenic activities (Brussard et al. 1998, Lackey 1998). This management approach integrates ecological and social information at the appropriate spatial and temporal scale in the decision-making process (Slocombe and Dearden 2002). Grumbines principles of ecosystem management (1994, 1997) are the result of an extensive literature review which identified dominant themes found in frameworks suggested by other authors (Brussard et al. 1998). It is not a framework for implementing ecosystem-based management, but is simply an analysis of common trends in such frameworks (Brussard et al. 1998). As a result, it provides an important insight into ecosystem-based management and will be used as part of the discussion for the applicability of such management approach for plains bison conservation around PANP.

A number of hurdles exist if ecosystem-based management is to be implemented. Scientific and socio-economic data have to be collected in order to understand the relationships between the ecological system and human activities (Brussard et al. 1998). Understanding these relationships is integral for conservation across politically defined boundaries (Slocombe and Dearden 2002). Further obstacles to ecosystem-based

management include issues surrounding contentious policies and a lack of interagency cooperation (Brussard et al. 1998)

Collaboration as part of ecosystem-based management between affected parties is desired, and is built on the foundation of public participation (Ludwig 2001, Margerum 2001). To paraphrase Borrini-Feyerabend's (2000) definition of collaboration: it is a process in which participants engage in equitable distribution of costs, benefits, functions, and responsibilities over a given natural resource. This process requires that a number of conditions be met if it is to be successful including the existence or creation of partnerships in order to facilitate working relationships between various parties (Margerum 2001). Furthermore, these partnerships must be transparent in all directions, in order to help ensure that all parties feel that the relationship is an honest one (Borrini-Feyerabend et al. 2000). If any party feels that another is not being honest then the process is destined to failure (Borrini-Feyerabend et al. 2000).

Collaboration also requires that comprehensive goals and objectives be developed by all participants and not by any one specific party. This recognizes that a multitude of interests can be found amongst participants and emphasizes the importance of community identity in the process (Michaels et al. 2001, Carlsson and Berkes 2005). Scientists constitute only one segment of the participants that should be involved in collaborative processes. Participants can come from a wide range of backgrounds and will have not only different perspectives, but different levels of education (Ludwig 2001). Consequently, scientific information must be used solely as a tool and presented in such a way that all participants are able to understand it (Ludwig 2001).

Collaboration incorporates a wide continuum of thoughts, ideas, theories, and concepts which provides a number of benefits including expanding programs, building communication and power relationships, facilitating programming, and building commitment, ownership and accountability (Kapoor 2001). It also has a number of constraints, of which participants should be made aware. The uncertainty that is inherent in collaborative management provides some of the greatest concern to its proponents (Michaels et al. 2001). Other constraints include heavy time and resource commitments, uncooperative institutions, corruption, and the diversified opinions that are characteristic of society (Kapoor 2001, Michaels et al. 2001, Carlsson and Berkes 2005)

This work primarily focused on creating a framework for an organizational structure which fosters bison conservation in Saskatchewan based on the principles of ecosystem-based management. An emphasis was placed on determining a vision for such an organization, conceptualizing its structure and governance, and determining potential conservation initiatives in the short and long term.

Area of Interest

The research area is located in central Saskatchewan, specifically in the regional municipalities of Big River, Canwood and Shellbrook as well as the southwest corner of Prince Albert National Park (Fig. 1.3). The private lands that are frequented by bison are typically used for crop production or cattle ranching (Bergeson 1992). Other areas outside of PANP where bison are found include the Northern Provincial Forest, community pastures, and a wildlife management unit (Bergeson 1992).

Methods

Legitimacy and Credibility Building

Prior to conducting any in-depth field work, it is key that the researcher develop a level of legitimacy and credibility (Borrini-Feyerabend 1996). This was particularly true in my case. I had little experience with bison and had never been to the Province of Saskatchewan. Consequently, a lot of effort was spent developing a rapport with members of the community, and establishing acceptance and a willingness to work with me. The development of a rapport with individuals helped me promote why I was in the region and alleviate any suspicion regarding my intentions.

One of the primary means of establishing credibility began with attending the Annual West Side Resident's Day (Figure 4.2). This annual event was created in response to opposition of the closing of the west side access road that once linked the west side of the Park with the Waskesiu town site. The Resident's Day, including people from the local community, and invited guests, permits vehicle access down the normally closed road to areas of the Park that are now difficult to reach. The event continues with a barbeque at the Sturgeon River Wardens Station and entertainment is provided by a Parks Canada Interpreter as well as live music from the community. This is a well-attended community event and my participation was integral to introducing this research to members of the community who are impacted by bison. In particular, this event allowed me to develop contacts in the community.

I spent the first month participating in a variety of projects in order to develop a relationship with the community and get an understanding of their perspective on the bison conservation issue. I spent time visiting various families, introducing myself and

the project. I also engaged in a variety of internships with both cattle and bison ranchers, who are also farmers by necessity. I spent various amounts of time with different individuals and I was involved in a number of farm related chores including pulling posts, fencing, driving machinery and feeding bison (Figure 4.3). The purpose of these internships was to gain an understanding of the farming and ranching operations. In addition, this gave me a better appreciation for the type and cost of damages caused by bison. For example, after spending a day working on fencing, I now understand the frustrations that farmers have when a fence is torn down by bison. Credibility building was a continual process and I always remained aware of how the community felt in regard to my presence. Accordingly, I continued to interact with members of the community in different events, including volunteering to help setup for the Ness Creek Folk Festival, taking people on hikes in the Park and attending the Big River Come Home year festivities.

Semi-Structured Interviews

The primary means for collecting data was through the use of semi-structured interviews. Semi-structured interviews allow the interviewer to collect data while allowing some flexibility to explore tangential ideas that are created through a loose discussion (Bernard 2000). This is important as new ideas are often generated, filling data gaps that the researcher may not have known existed (Bernard 2000). The complete interview schedule can be found in Appendix A. Table 4.1 presents the main structure of the interview schedule, including the rationale for the topics selected. The rationales are a

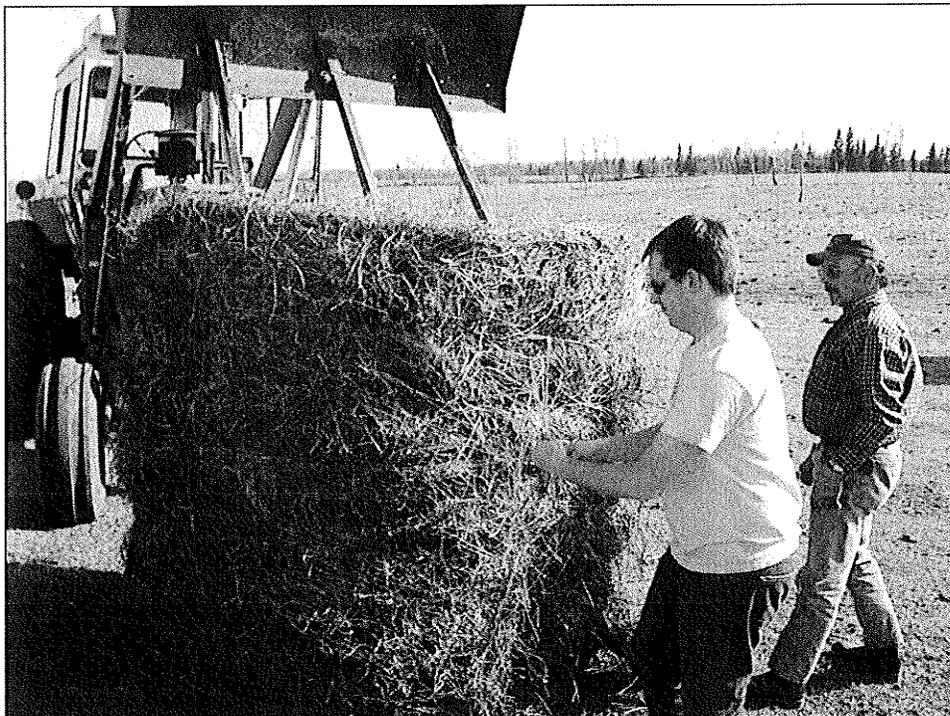Figure 4.1: Annual West Side Resident's Day.

Figure 4.2: Removing twine from hay bale to feed bison at Raven Ridge Bison Ranch.

result of fundamental components that were identified through the review of the literature on collaborative and ecosystem-based management (Grumbine 1997, Lackey 1998, Venter and Breen 1998, Borrini-Feyerabend et al. 2000, Kapoor 2001, Slocombe and Dearden 2002).

Table 4.1: Structure of interview schedule.

Category	Sub-Categories	Rationale
Background Information	Residency Status	Focused on understanding how long people have been in the area in order to understand how things have changed over time.
	Experience and Attitude surrounding Bison	Designed to create an understanding of the perspective of each interviewee.
	Educational Information	This helped gauge what information is available about the herd to the local community.
Collaboration	Stakeholder Involvement	Focused on issues surrounding priorities, benefits, who should be involved, an individuals willingness to participate and barriers/promoters for creation of community-based organization.
	Fairness	Designed to determine barriers of trust between interested groups and to investigate representation of groups in any community-based organization.
	Consensus-Based Decision-making and Power Sharing	Focused on the structure of the organization and the decision-making process.
	Transparency	Designed to investigate how transparent people felt the organization should be and how this transparency could be attained to their satisfaction.
Conclusion	Peer Referencing	This section allowed interviewees to recommend other people in the region that they felt could contribute to my research.
	Follow-Up	This section was designed to determine whether or not the interviewee would be available for follow up questions if required.

Interview Selection

Interviewees were identified using three different criteria including, people who are impacted by the bison, people who have a direct interest in the bison (i.e. tourism operators) and people who wish to be involved in bison conservation. An initial list of interviewees was created using the membership list of the Wild Plains Bison Management Strategy Development Team, consisting of representatives from Parks Canada, Saskatchewan Environment and local regional municipalities. Additional names were added to the list at the Annual West Side Residence Day, where people self-

identified their wish to be involved. A final means of identifying participants was through the use of the peer reference system where interview subjects were asked at the end of their interview if they could think of anyone that should be consulted on bison issues. Suggested names were added to the list of potential interviewees who were then contacted. A total of 42 interviews were conducted. The make-up of the interviewees was as follows: 7.8% Parks Canada, 7.8% Saskatchewan Environment, 5.2% Saskatchewan Agriculture, 84.2% landowners, 76.3% farmer/ranchers (full and part-time), 5.2% regional municipalities councilors, and 10.5% nature based tourism operators (numbers are greater then 100% because many interviewees belonged to more then one group). The role of First Nations in this organization could not be captured within the scope of this study. It is however clear that they are interested in the issue and initiative and when time permits, will likely participate.

Interviewees were given the option of having their interview digitally recorded or not, and indicated their preference when signing the consent form (Appendix B). The majority of people preferred not to have their voices recorded for varying reasons, the most prevalent of which was just feeling uncomfortable. People also appeared to be nervous when recorded during the interviews. This type of research can be labeled as action research, which is an iterative process where the researcher must learn and adapt as the research continues (Neuman 2000). Consequently, I realized that people became much more relaxed when the recorder was put away. The discussion would continue more freely, with me taking notes in a written format. It was at this stage that the most significant data were collected, as people spoke more freely about their attitudes and values. While this limited the amount of direct quotations available, it allowed me to

collect more in-depth information. After leaving the interview, I would immediately take notes on some of my reflections of the interview, a process which is termed writing reflective memos (Bernard 2000).

Data Analysis

Digital recordings and written notes were transcribed into a Word document and converted into a Rich Text Format document for analysis. NVIVO (QSR 2002) allowed me to generate themes from the data and to then further divide these themes into sub-themes. These sub-themes can then be further divided into further sub-themes and so on to allow for an in-depth thematic analysis of the interview data. For this research, the analysis never went beyond the tertiary level as there were no further themes to explore.

Thematic analysis, as mentioned, was conducted in order to determine general trends in the data from identifiable themes and patterns (Aronson 1994). Thematic analysis begins with the themes and sub-themes created in NVIVO. These themes and sub-themes allow for a complete view of the data and consequently facilitate the emergence of patterns (Aronson 1994). A summary of the interview results by interest group and in response to the questionnaire is presented in Appendix C. This table was distributed, along with a summary update (Appendix D), to the participants for review prior to the focus group meeting in May, 2006. A focus group can be defined as "an interview style designed for small groups" (Berg 2005, pg 123). The focus groups conducted in this study were guided, allowing the investigation of topics that required further investigation (Berg 2004). Preparing these documents was also a useful process

for summarizing information and identifying gaps in the data that would need to be filled upon my return to the field and at the focus group meeting.

Data Confirmation and Gap Filling

When conducting a thematic analysis, it is important to return to the interviewees to gather feedback on the patterns that are identified (Aronson 1994). This was accomplished by returning to the community to meet with participants on both an individual and group basis, with the ultimate goal of providing an opportunity for participants to learn about the interview results yo further develop some of the key emergent themes as a group.

During that time I also had the opportunity to attend a West Side Bison Management Group meeting (Figure 4.4). This provided an excellent opportunity to announce my return to the region and the reason for the visit. In the time preceding the focus group meeting, I was able to visit nearly all of the interviewees to hand deliver the invitation to the meeting, along with a summary update on the research activities. For the participants away from home, invitations were left at their house. During this time frame, people who had requested to review their interview transcripts prior to project completion were given the opportunity.

The focus group meeting was held on April 20th, 2006, in the Laddervalley Community Hall. The purpose of this meeting was to show appreciation for people's participation, to present my findings to date, to receive feedback from the participants and to have the participants enter into discussion on topics that were identified as gaps.

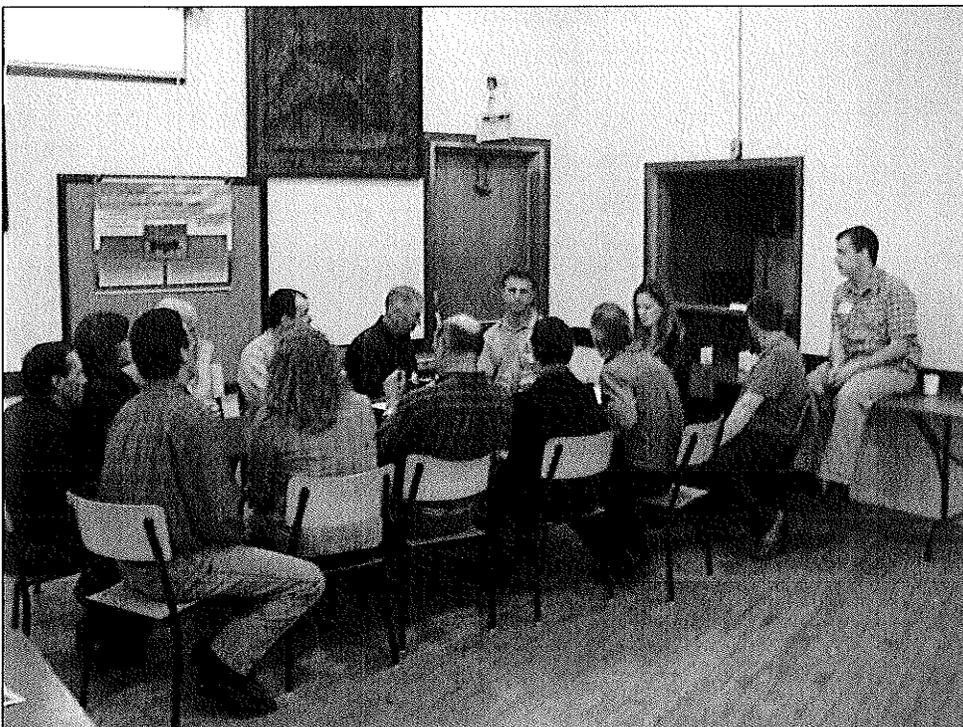Figure 4.3: West Side Bison Management Group meeting.

Figure 4.4: Focus group meeting following participants' appreciation dinner and presentation of research findings from interviews.

To show appreciation for people's contribution, a dinner was provided for the participants and their spouses. The Laddervalley Ladies Group catered the meal, which allowed the money to stay within the community. This was also effective in motivating people to come to the event, with approximately sixty people attending. Following the meal where Norman Aarrestad, a local parish member, said grace, I presented my results through a PowerPoint presentation. Lloyd O'Brodovich chaired the meeting.

The final part of the evening involved breaking the group up into three working groups (Figure 4.5). The intent was to review and further discuss the project results with a primary focus on (1) Structure and Governance, (2) A Vision and (3) Initiatives. Group composition was selected to ensure that each group represented diverse interest groups. Each working group assigned participants to be a recorder and a reporter. The recorder was responsible for recording all suggestions on a flip chart, while the reporter was responsible for presenting the outcome of the group discussions at the end of the meeting to everyone present (Figures 4.6 and 4.7). To help facilitate discussions, a summary of the interview results were available to each group. Appendix E presents a summary of the ideas conveyed by each working group.

Results

When analyzing the data from this research it was important to be aware of differences in the length of residency (short and long term) of the participants. It is important to note that nearly all of the landowners have been part of the community their entire lives while government employees are a mix of people who have been
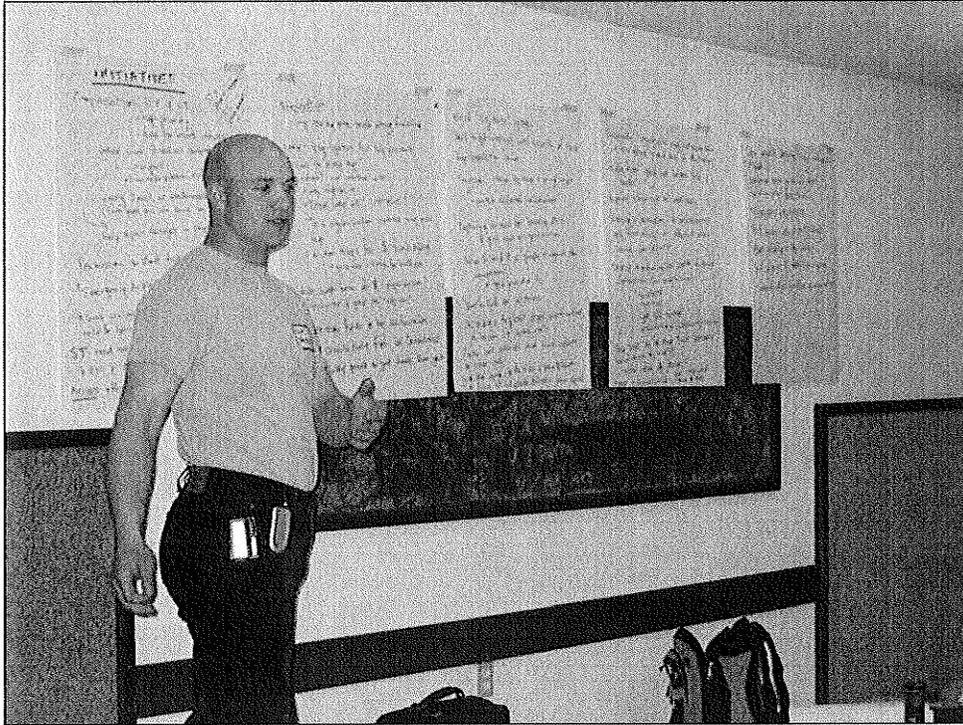
Figure 4.5: Clint Panter presenting results from the focus group discussing initiatives.

Figure 4.6: Laurel Vaadeland presenting results from focus group discussing structure and governance.

around for just as long and people who have been in the community for 10 or more years. Clearly, this is not a transient community.

Data collected from the interviews and the focus group meeting were compiled and analyzed based on three themes; vision, structure and governance, and proposed long-term and short-term initiatives.

The Vision

When establishing an organization it is important to recognize why it is needed (Lackey 1998, Kapoor 2001, Michaels et al. 2001). The organization should be created with meaningful input from all interested parties (Lackey 1998, Kapoor 2001, Michaels et al. 2001). This topic was addressed indirectly during the interviews and further discussed by one of the working groups at the focus group meeting. Three basic elements for a vision for the organization were discussed including mitigating impacts, influencing policy and promoting conservation (Table 4.2).

Mitigating Impacts

One of the primary goals identified for this organization was to work with other agencies in developing ways in which impacts to private land can be mitigated. Table 4.2 clearly demonstrates the importance of reducing the impacts on local people "It would decrease damages and reduce operating costs," "It would decrease the cost to me," and "Reducing damages and getting some sort of compensation," are just a few of the quotations which reflect the importance of developing mitigation measures.

Table 4.2: Creating a vision.

Question	Frequent Comments	Implication
Role in Landscape	-Make it miserable, nuisance, fence smashing, rolling in crops, not safe to walk. They cause damage! -Nice to have in the park, don't want too many outside the park though. -They have a historical significance. -No real significance -Nice to see -Potential for tourism. -Nice to see but becoming a nuisance. -It's a pain in the ass.	- People wish to have the bison around and see a historical significance. Effective conservation and mitigation is needed.
Opinion Towards Grassroots Initiative	- They need something like that. - Good idea. Has to be done. - Would help people know what the rules are.	- There is support for it in the community and it should provide guidance and information.
Perceived Personal Benefits	- It would decrease damages and reduce operating costs. - Decrease the cost to me - We'd like to hunt one.	- Mitigation measures will provide the biggest personal benefits to people. - Policy change regarding hunting is wanted.
Perceived Community Benefits	- Get some ecotourism going. -Decreasing damages reduced economic impact - Possible benefits from ecotourism	- Conservation of the herd will ultimately result in economic benefits from tourism.
Priorities	- Reducing damages and getting some sort of compensation. - Provide a legal hunt! - Compensation for damages. This would be cheaper then using a helicopter to chase them off. - Eliminate the bachelor bulls	- Mitigation of bison impacts is the of the utmost priority. - A licensed hunt for bison is in great demand, however it would require a policy change from the Provincial government.
Promoters	- Compensation could get people together. - Good support in most of the community. - having more events, more walks in the park, more access to this side of the park. By photos, bringing the school kids out to see the animals and things like that. Short movies, t.v. spots...I really think that what they need is promotion.	- Mitigation is needed to promote the organization. - Conservation through education and participation would help.

Recommendations resulting from focus group meetings:
    3 Fundamental elements of a vision for a community-based conservation organization
        1.   The organization could help mitigate bison impacts.
        2.   The organization could influence policies surround management of the bison herd.
        3.   The organization could become involved in promoting conservation.

This is of utmost importance because damages to infrastructure and crops are affecting the livelihoods of a number of people owning land adjacent to the Park. Not only does this have an economic impact on these landowners but it also puts the animals at risk. As discussed earlier, a number of landowners have taken action to have bison killed (Figure 4.8) and some landowners have threatened to continue with these actions if damages to their fields and fences are not reduced.

Figure 4.7: Bison shot on private land.

Influencing Policy

Landowners identified current policies surrounding bison as one of the major contributors to the problems arising from the herd. Table 4.2 highlights the need for compensation for damages caused by bison. Up until this past year, bison damages were not covered under wildlife depredation or crop insurance. Pressure from local

landowners, Parks Canada and Saskatchewan Environment resulted in the adoption of certain types of damage being covered under crop insurance (Saskatchewan Agriculture and Food 2007). While landowners feel this is not adequate, it is a positive step and an example of the successes that are possible through collaborative efforts. Members of the community recommended that one of the roles of a community-based organization could be to work in collaboration with provincial and federal governments in order to influence policies in a direction that benefits the community.

Conservation

The third element in creating a vision for the organization is that it should promote conservation. Table 4.2 shows that while people enjoy having bison in the area, they do not want to be adversely impacted by them. In particular, people would like to have the bison remain in the park and never venture onto private land. If this was to happen, it would eliminate impacts on private land. Currently there is no plan to keep bison in the park and consequently conservation efforts are needed to minimize these adverse impacts. To date, most, if not all, conservation initiatives are implemented by either provincial or federal government departments. Many people felt that if bison are going to exist at the private/public interface then the community should be involved in its conservation. Table 4.2 outlines how the community feels they can be involved, including generating natured-based tourism operations. The purpose of this is two-fold. First, many people see conservation initiatives generating some employment and economic growth in the region. This is important, as the local mill shut down recently and left a number of people unemployed. The second purpose is to create a sense of

stewardship surrounding the herd. If people are actively engaged in the conservation of the herd then they may develop a sense of ownership and pride around its existence, thereby increasing the potential success of the herd. One way of promoting conservation that was proposed was in educating the public and particularly the children.

The three basic elements discussed above provide the insight into the creation of a vision based on the priorities of the community. These elements are not mutually exclusive. The research participants foresee an organization that promotes bison conservation through a number of measures, including sharing of information and mitigation of the impacts created by a larger bison herd through various programs and policy changes.

Structure and Governance

The interview questions surrounding stakeholder involvement, the decision-making process, power sharing and transparency helped create an outline for the structure and governance of the Sturgeon River plains bison herd conservation organization. The results of the interviews were further discussed at a focus group meeting. Three generalized themes were identified: organizational structures, decision-making processes and accountability (Table 4.3).

Table 4.3: Structure and governance

Question	Frequent Comments	Implication
Who Should be Involved	- Well I guess those three groups of people, SERM, Parks Canada and local residents that are basically directly involved. - Parks Canada, SERM, landowners, First Nations. - Government should play and advisory role	- There is a diversity of interests surrounding the bison herd and consequently a variety of agencies should be involved in decision-making but Government should would in partnership with the community.
Fairness	- I suppose with good communication and stuff. - Make sure you cover a wide range of interests. - A wide range of representatives, stronger voice to ones along the park. Representatives should have long terms and ensure that they are unrelated. - Representation should cover most people but impacted people should have more influence. - - Should consist of a one person per RM, a landowner, someone representing economic interests and First Nations	- There should be representatives from a variety of are, however those that are impacted should have the stronger voice.
Barriers to Trust	- Some between government and landowners (both ways) - Lack of trust with SERM and PC from community. Perceived lack of trust from SERM and PC towards community.	- There are trust issues between all agencies involved that must be overcome.
Decision-making	- That's a good question. I suppose a majority vote. Consensus might be hard to come by. - Voted majority if consensus cannot be made. - Has to be consensus. - 2/3 majority depending...some decisions may need consensus	- There is concern about being able to reach a consensus on decisions. A 2/3 majority vote may be needed at times.
Barriers	- Negative opinion - None exist. - Diversity of opinion and perspectives	- Some concern that the different opinions and perspective may inhibit the formation of a community-based organization.
Transparency	- It should be very transparent. - Should be very transparent to help prevent abuse. 4. Everything should be available	- Transparency is essential.

Recommendations resulting from focus group meetings:
A board of directors should consist of
- One person from each RM
- A landowner adjacent to the park
- Representative of economic interests
- Potentially a First Nation's representative

Government organizations should not have a vote but have a seat at the table.
Decision-making should work towards consensus but use 2/3 majority vote if at an impasse.
Transparency is essential in all aspects of governance.
It should be driven by the community, and power and decisions making should remain there

Organizational Structure

Not everyone who is impacted by bison care to play an active role in making decisions surrounding the herd. Instead, they prefer to have their interests represented by someone else. In addition, while other people would like to be involved they are often unable due to other commitments such as work and participation in other organizations. Finally, there are also people who wish to be involved in influencing management decisions solely for their own interest, with little concern for anything else.

How should the structure of the organization be designed to best represent the local community? Based on the results from the interviews and follow-up meeting, the structure that most appropriately addresses the issues surrounding bison management is a board composed of representatives from various interested parties. Some of the groups identified included local landowners, Parks Canada, Saskatchewan Environment, First Nations, Municipalities, NGOs and tourism operators. It was felt that Provincial and Federal Government representatives should play an advisory role with the organization and not have a vote. There were also suggestions to include someone representing economic interests regarding the herd. Each interest group would appoint a representative(s) through a process that is acceptable to them. In the case of the individual representing the local landowners, it was suggested that the person(s) be elected through a democratic process at a general meeting. There should be representatives from the three Regional Municipalities involved and a landowner who has land adjacent to the Park. There were also suggestions that the composition of the board not change entirely at one time in order to ensure that some experience is kept

during transition periods. In order to accomplish this, board members could be elected and serve staggered terms of office to ensure there is always at least one experienced representative on the board.

This structure, however, was not suggested without some reservations. One of the primary concerns raised when discussing the potential structure of the organization was to ensure that the landowners who experience negative impacts were not marginalized. Due to the lack of trust mentioned earlier, there was some apprehension as to whether or not Parks Canada and Saskatchewan Environment would act in the best interest of the people living adjacent to the Park. This is further compounded by a lack of trust in people who stand to gain economically from having the bison remain free-ranging (i.e. ecotourism outfitters). While landowners acknowledge that they must work in conjunction with different interest groups, many felt that the local landowners should have a greater representation in management decisions. As one landowner explained "We need to make sure all interests are represented and the impacted people should have more of a voice". The question now arises, if impacted people are to have more representation, how should the board be structured?

The board structure is based on five interest groups have been identified and shown interest in being involved in bison management. Thus, at a minimum the organization would be governed by representatives from each of these five interest groups. However, if the organization wishes to address the concerns identified by the landowners, additional seats could be allotted to the landowners in order to give them a stronger representation. It should be pointed out that to date there have been no First Nation's members involved in this research. Both Big River First Nation and

Ahtahkakoop First Nation expressed interest in participating but were unable to due to other commitments. In addition, Parks Canada and Saskatchewan Environment have stated that they see the roles of their organizations as advisory; envisioning the organization as a community-based organization working in partnership with other governmental and non-governmental organizations.

Decision-making

If a community-based organization is to have any success, it is imperative that it be able to make decisions effectively (Borrini-Feyerabend et al. 2000, Kapoor 2001). The collaborative management literature suggests that while a consensus-based decision-making process should be adopted, it is not mandatory (Borrini-Feyerabend 1996). One of the main challenges to utilizing this form of decision-making is that it is time intensive (Borrini-Feyerabend 1996). Table 4.3 clearly illustrates the mixed responses regarding how decisions should be made regarding the proposed organization. Many people supported the idea of using consensus but were concerned with it stagnating the process to the point where the group is ineffective. One participant summarized concerns raised by the group in saying "I suppose a majority vote. Consensus might be hard to come by". Instead, the trend is for the group to strive towards consensus with the proviso that if a decision cannot be reached, a vote will be taken. However, it must be by a greater majority than a simple fifty percent plus one. A number of quotes supporting this idea can be found on table 4.3. While this is the approach that seems most acceptable to the participants, it poses a problem: at what point will the group decide that consensus is not achievable? It is much simpler to take a vote and decide with a 2/3 majority. The

decisions that arise from this sort of process are often not the best decision for the situation, as the people who vote on the side that loses will feel that their concerns are not relevant and their willingness to participate may be reduced (Kapoor 2001). Consequently, a vote of 2/3 majority should only occur after significant effort has been deployed to reach consensus and there is consensus towards moving towards the 2/3 majority vote.

Accountability

Accountability can be achieved by having the decision-making processes open and transparent to those who wish to participate (Smith and McDonough 2001). The case is no different in regards to the decision-making process of the proposed organization. Community members and government officials alike agree that transparency is fundamental if this process is to succeed. The section on transparency in Table 4.3 clearly demonstrates that there is strong support for complete transparency, where all documents and decisions are made public. The participants in the research have identified a variety of ways in which transparency can be achieved, including the development of annual reports to members and the community, establishing rules in the governing documents of the organization, regular open public meetings, a monthly newsletter and publishing in local papers including the Gateway, Shellbrook Chronicle and the Bison Times. This list is by no means exhaustive and it is encouraged that other avenues of communication be investigated.

Members of the community particularly felt that there needs to be transparency regarding the expenditures of a community-based organization. Members of the

community want to know how much money is being spent on compensation, and not necessarily how much is going to each landowner.

To summarize, the organizational structure should consist of at least one person from each regional municipality, a landowner adjacent to PANP, a representative of economic interests (tourism operators, etc) with the potential for a First Nation's representative. Provincial and federal government representatives should have a seat at the table but not voting power. In effect, the organization should be led by the community. The organization should also strive towards consensus with the proviso that if consensus cannot be reached and a decision is needed, a 2/3 majority vote is acceptable. The 2/3 majority vote was decided upon because people felt that a decision made without consensus should at the very least reflect the large majority of the community. Finally, transparency towards the operations and expenditures of the organization should be maintained while respecting individual privacy. Ultimately, this group would be the voice for the community and would work with Parks Canada, Saskatchewan Environment and other interested parties in making management decisions regarding the bison herd.

Short and Long Term Initiatives

During the course of the interviews and the follow-up meeting, a number of initiatives were proposed and supported by the community, Parks Canada and Saskatchewan Environment. These initiatives have been grouped into four categories; educational, economic, research and management (Table 4.4).

Table 4.4: Short and long term initiatives.

Question	Frequent Comments	Implication
Negative Impacts of Interest	- Once the numbers get to a certain point they could start doing some damage, that's for sure. - They are being seen outside of PANP more, destroying more crops and pasture. - I'm worried about fence damage and the bison getting in with my herd. - More damages, particularly to fences.	- Actions have to be taken to reduce the impacts on landowners - Concerns regarding the size of the herd.
Positive Impacts of Interest	- I'd like to see a hunt - Well, they're nice to have around. How many...they're unique. I mean how many herds of wild buffalo do you have in Canada that is actually walking across your land? - There are no positive impacts. - I'd like to see a hunt - There is a need for tourism in the area and we need to increase access to this area and the Park.	- Opportunities for economic development - Hunting is an option that people want to be considered as a management tool
Mitigation Ideas	- Compensation for damages. - I think they need more pasture in the Park. Let the fires go up, it'll open it up some. - Provide a legal hunt! - Establish an interpretive centre - Keep them in the Park using fencing, - We could award depredation licenses where farmers can kill a bison if they are causing damages and keep the meat.	- Mitigation of damages is needed - Management of herd and ecosystem is needed - Public needs to be educated - Ideas for mitigation need research before they can be successfully implemented

Recommendations resulting from focus group meetings:

Potential initiatives that the community thought could occur could be divided into four categories
1. Initiatives which focus on education.
2. Initiatives that encourage economic benefits.
3. Initiatives which focus on research surrounding bison management
4. Initiatives which focus on management

Educational Initiatives

A number of ideas focusing on how to inform people about the herd, the proposed community-based organization and the options for landowners were discussed during the interviews and further developed during the working group session. These

ideas are presented in Table 4.4. There was significant discussion on establishing an effective communication plan that would allow people to be kept up to date on the activities of the organization as well as on the status of the herd. To accomplish this task, a regular newsletter could be developed and sent out to subscribers. Furthermore, it was suggested that regular meetings be held so that people could attend for input and information purposes. Lastly, it was suggested that the elected representatives, or designates, could give presentations to various organizations in order to communicate the goals and results of the initiatives.

The importance of getting children from the local schools involved and potential active involvement through school programs was discussed. One example mentioned was to utilize the Park more for educational purposes (i.e. nature walks).

Finally, a number of people felt that a visitor centre should be established on the west side of PANP and that it should be run by the community. There was also talk of working in cooperation with the Ness Creek Society in establishing a boreal interpretive centre, similar to the Grassland Naturalist and Interpretive Centre in Alberta.

Economic Initiatives

As discussed earlier, one of the primary problems associated with the bison herd is the damage to fences and infrastructure on private land adjacent to the Park. The following quotation is reflective of many of the landowners' concerns: "Once the numbers get to a certain point they could start doing some damage, that's for sure." While there have been changes to the policies on crop insurance so that damages made by bison are now covered (Saskatchewan Agriculture and Food 2006), most of the

damages experienced by farmers remain uncovered and thus this policy change has done little to ease tensions regarding the herd. Consequently, nearly every interview and meeting participant is in support of a compensation program managed by the community, as is reflected in Table 4.4. The idea of this type of program is that damages associated with bison would be assessed by landowners and compensation would be awarded according to the policies established by the organization. As one can imagine, this could potentially be expensive and thus requires funding. It should also be noted that compensation is only a short-term solution in regards to bison damage. As one landowner stated "Eventually compensation may cost more than we can afford..." Mitigation measures must be instigated as well. These will be discussed in the following sections.

Another economic initiative that was discussed was to use the herd to develop tourism activities in the region. This is outlined in Table 4.4 where a participant said "There is a need for tourism in the area and we need to increase access to this area and the Park." Varieties of ideas were suggested and include selling photography expeditions, having an art retreat, selling hunting tags and establishing an interpretive centre. If these initiatives were to be undertaken, additional investment into infrastructure would be required as there are no accommodations outside of backcountry camping within 25km of the Park entrance. Furthermore, the compatibility of various initiatives would have to be assessed. For example, hunting may not be compatible with photography expeditions and thus they would either have to occur in different areas or at different times.

One of the initial thoughts that arose from this research is that there is a need to develop a system that facilitates the sharing of information between different agencies and the community. Many members of the community also agreed that it is vital integral to engage local landowners in research activities, particularly research that may influence their land. Examples could include experimenting with different crops, fencing techniques and burning.

As discussed earlier, ecosystem-based management should utilize a number of smaller experiments to determine what works best in a given situation (Grumbine 1994, Brussard et al. 1998). Local landowners should be working with researchers in conducting these experiments on their land. Many of the people in the region possess a significant amount of knowledge about the region and about managing large animals. They feel that they possess a wealth of knowledge that researchers should be accessing. Furthermore, it was felt that PANP staff could be working with local people to establish a monitoring program. In particular, many landowners were able to discuss numbers and frequency of bison excursions outside of the Park, as well as what plants they were grazing. Access to this type of information could prove invaluable when a management plan is implemented as landowners will be better equipped to inform a community-based organization that represents their interests about changes in bison movements which may result from implemented strategies.

Another research initiative that was suggested was to work with universities in order to increase research and science capacity. While there is a relationship between Université Laval and Parks Canada, this relationship does not extend to the surrounding

communities as researchers are only working within the Park boundaries and have not actively engaged in collaborative research with any of the other agencies that are impacted by bison. There have been suggestions that a relationship with the University of Saskatchewan, in Saskatoon, would be more feasible, as it is a more closely situated university and there are already pre-existing research partnerships. Furthermore, two members of the strategy development team are professors at the University of Saskatchewan.

Finally, some landowners have already engaged in small scale experiments. One farmer described a series of experiments regarding effective fencing for keeping bison off his land. He has had some success but since he is not a scientist he felt that nobody would care about his work. However, this is just the type of activity a community-based organization can engage. Furthermore, information from such independent initiatives needs to be shared with other individuals and organizations for two reasons. First, it allows for the efficient use of resources, as experiments that are not being needlessly duplicated. Second, in the case where experiments result in positive results, similar activities can be implemented on other lands. Furthermore, practitioners can also learn from what has been tried, what has worked and what has not worked, thereby saving time, energy and expenses.

Management Initiatives

Interviewees clearly indicated their desires to be involved in any management initiatives, and that a community-based organization would be an excellent means of facilitating this (Table 4.4). In addition, all interviewees felt that the burden of this

initiative should not be placed solely on the shoulders of landowners. Of particular concern is the use of strategic fencing to help divert bison from their normal crossings. Landowners do not think that the fencing should occur only on their land, restricting their access to the Sturgeon River, but instead felt that at least some fencing should be done in the Park, this suggestion was not initially well received from Parks Canada staff. The staff did not want any fencing in the park, however there have been recent comments that suggest that some strategic fencing may be an option.

Some of the management initiatives focused on opening up new habitat for the bison and are summarized in Table 4.4. Suggestions included burning areas within the Park to open meadows, planting lure crops in the Park and purchasing land adjacent to the Park to create a buffer zone. Other suggestions dealt with more preventative measures and included planting crops undesirable to bison, using strategic fencing, clearing bush and flagging fences in order to make the wires visible to bison, monitoring the health of the herd on private lands to prevent disease transmission, using double fences to keep wild bison from accessing domestic herds and keeping the population to a level that is acceptable to everyone.

Finally, some initiatives were more focused on mitigating the impacts of bison. Suggestions consisted of shooting stray bulls and supplying compensation. One participant suggested that "We could award depredation licenses where farmers can kill a bison if they are causing damages and keep the meat." Another suggestion included establishing an emergency action group to respond when bison are becoming a nuisance. The emergency action group would be composed of members of the community who would respond to incidents regarding bison outside the Park including mending fences

and chasing bison back into the Park. The creation of an emergency action group is an interesting construct in that it actively engages members of the community in bison management as well as providing local landowners with direction in what to do in case they have problems with bison on their land, something that many feel is badly needed.

Discussion

The Applicability of Collaboration and Ecosystem-based Management

The vision, governance structure and short and long-term initiatives envisioned by the community generally followed principles of collaborative and ecosystem-based management (Dempsey et al. 2002). This includes the government land manager perspective; which attempts to address the conflicting demands of legislation, the public and conservation organizations by stressing inter-agency cooperation, the use of legislation for guidance and direction and public consultations as opposed to true participation (Dempsey et al. 2002, Slocombe and Dearden 2002). It also includes the ecological perspective, where proponents stress the need for large, intact areas to promote conservation (Dempsey et al. 2002, Slocombe and Dearden 2002).

Establishing a strategy for promoting the conservation of the herd is not simply an issue of science, but of inter-agency cooperation, or collaboration, in order to promote conservation on public and private lands outside the Park (Grumbine 1994, Grumbine 1997, Lackey 1998, Dempsey et al. 2002). Interagency cooperation should adopt a collaborative approach, which encourages partnerships built on mutual respect and trust (Borrini-Feyerabend et al. 2000). The creation of a community-based

organization as suggested by the participants will facilitate this inter-agency cooperation, and promote conservation on the privately-owned land adjacent to PANP and frequented by bison (Cortner et al. 1998, Smith and McDonough 2001). Furthermore, such an institution will allow the system to be less affected by disturbance or change (Olsson et al. 2004).

The results of this research support an ecosystem-based management approach for plains bison conservation (Table 4.5). In particular, there is wide recognition that as the herd continues to grow, there will be an increase in both the frequency and number of bison outside the park and consequently plains bison conservation requires thinking at an ecosystem scale. The community is only just beginning to think at this level. This reflects the principle of managing based on *ecological boundaries* and not anthropocentrically defined boundaries.

The results of this study indicate significant support for *interagency cooperation* regarding the management of the herd, particularly through a collaborative process. Specifically, members of the community felt that Parks Canada and Saskatchewan Environment, and to a lesser extent First Nations, should work with locally impacted people to develop and implement a management plan that is in the best interest of all. The role First Nations could play has not been defined in this study and consequently I cannot address this issue, however, there were comments from the participants that First Nations should play some role. Participants were strongly in favour of creating a community-based organization that can work as the 'agency' representing private citizens, working in collaboration with the above-mentioned organizations.

The results from this study also suggest that cooperation between agencies should be based on a collaborative approach, where all participants are meaningfully engaged and power is shared in an equitable manner. Many of the suggestions put forward by the research participants will require cooperation among the agencies involved in making decisions regarding the bison herd. Initiatives will require the direct involvement of the impacted landowners, on whose land the initiatives will have to be implemented. Parks Canada will also have to come to a compromise and allow certain actions (i.e. strategic fencing) or habitat modifications within the Park providing it is possible given their legislative madate. First Nations are the only private citizens that are legally allowed to hunt bison and thus their cooperation will be necessary if any bison are to be killed. These are just a few examples of the roles that various groups can play and is by no means an exhaustive list. There was also discussion around relocating 'troublesome' animals to areas where they would not be a nuisance. This could involve selling some as breeding stock or moving them to less populated areas; however, these were just suggestions which will be considered by the organization at a later date.

The importance of using an *adaptive management* approach for plains bison conservation, another principle of Grumbie's (1994, 1997), finds applicability in this case. The problems surrounding the Sturgeon River herd are multidimensional and include, but are not limited to, fence and crop damage, risks of disease, risks of damage to domestic animals, negative impacts on game, and a sense of futility surrounding issues on their own land. Consequently, there are changes that must occur in the ways the area is managed and these changes should be flexible and adaptive (Grumbine 1997, Brussard et al. 1998, Slocombe and Dearden 2002, Berkes 2003). The results of this chapter

demonstrate that there is clear support for such thinking in regards to bison management around PANP. Community members tend to see the bison as serving different roles on the landscape; from having a historic and ecological role to one of being a complete nuisance that should be addressed. Much of the animosity towards bison comes not just from the actual real impacts that bison have on private land, but from the inability of impacted landowners to do much (short of killing the bison) or not being fairly compensated for their loss of money, infrastructure and time.

Landowners and government officials alike both recognized the complexities surrounding management decisions with the herd. People recognized that there is no quick fix to solving various management issues and they shared the view that some local actions could initially be deployed to determine their effectiveness. Some of these ideas include establishing a system of compensation administered by a community-based organization, having a response team established to help deal with stray bison, educating people about the herd, planting different crops at the Parks border, creating new habitat for bison in unpopulated areas, using strategic fencing, and shooting the animals that are responsible for luring others outside of the Park. Furthermore, an approach should be used which ensures any action taken to manage the herd (First Nations hunt, fencing, buffer crops, etc) will not result in major irreversible results. Instead, small scale experiments are suggested in order to test multiple ideas and methods to determine what is most effective in both the conservation of the herd and mitigating the impacts on private land. In the case of hunting, the number of animals killed could be controlled and kept to a biologically acceptable level.

These findings also support past research and emphasize the importance of using adaptive management approaches in problem-solving (Grumbine 1997, Brussard et al. 1998, Lackey 1998, Kapoor 2001, Lane 2001, Slocombe and Dearden 2002). The desire of participants to engage in a series of small scale experiments in different areas to see what works and what does not work supports the concept of adaptive management. The flexibility of such an approach allows practitioners to make errors, learn from them, and move past them, thereby allowing for people to respond to uncertainty (Ludwig 2001).

The above discussion only illustrates three of the more relevant of Grumbine's (1994) principles that are reflected in the situation around PANP. Other principles are summarized in Table 4.5 as they also apply to bison management around PANP. It should be noted that the only principle that was not supported by the results of this research was the principle regarding *humans in nature*. The principles outlined in Table 4.5 are dependent on collaboration between stakeholders if they are to be implemented in the future. Furthermore, the results of this research do not imply that these principles currently exist in full, but instead indicate that the initial thoughts and concepts are there. It remains to be seen if they fully develop over time.

As stated in chapter two, one of the greatest barriers to organizational change is establishing and maintaining trust amount participants (Cortner et al. 1998). There is often a lack of trust between organizations due to histories (Cortner et al. 1998) and this is particularly evident in this case. Past park management decisions, such as the closing of the West Side road, banning haying in the Park and removing the stationed warden created a sense of mistrust towards Parks Canada. People felt that Parks Canada staff did

not care about the people who lived around that section of the Park and instead were only concerned with the area around Waskesiu.

Table 4.5: Ten principles of ecosystem-based management & their applicability for bison management around PANP.

Principle	Trend
Hierarchical Context	Results focused on this being a multidimensional problem with many different interests and stakes involved and requiring more large scale thinking.
Ecological Boundaries	There is recognition that as the herd continues to grow there will be more bison seen outside of the Park and decision-makers need to start thinking on that level.
Ecological Integrity	The NIMBY syndrome was prevalent here as many people felt having the bison in the area was good providing they were not on their land. People felt they were part of the 'natural' ecosystem however this often did not translate into their land.
Data Collection	One of the identified initiatives that the community would wish to undertake is the active participation in research in collaboration with other agencies. People also recognize that more information is needed for effective decision-making.
Monitoring	Many landowners were able to identify the number and frequency of bison on their property. This information could be useful for the conservation of the herd.
Interagency Cooperation	A strong trend for interagency participation was identified and included local landowners, Parks Canada, Saskatchewan Environment and First Nations, with impacted people having the largest representation.
Humans in Nature	There was no significant discussion surrounding how people perceive their role in nature.
Adaptive Management	Multiple ideas have been suggested that could be implemented using a precautionary approach including a hunt, creating new pasture, using fences and creating a compensation system.
Organizational Change	Discussion here was around the establishment of a community-based organization that could work with other agencies in bison management.
Values	Two distinct value trends emerged in the interviews. The most dominant was of values surrounding livelihoods. The second value was the social value of having the bison in the area.

During many of the interviews, people felt that Parks Canada and Saskatchewan Environment did not trust the abilities of the local people to be engaged in resource management strategy development and implementation. Parks Canada and Saskatchewan Environment representatives also commented that they felt that the communities do not trust them to do their job. Whether or not this lack of trust is real or perceived is irrelevant, as either way it can cause conflict and tension. Efforts, including increasing involvement of both agencies in the community, need to be made to build these relationships if organizations are to address the problems surrounding the herd.

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Furthermore, meaningful collaboration with community members and help aid in overcoming negative histories and building trust (Cortner et al. 1998).

There is a wide range of values that must be taken into account in regards to the bison herd. While there is a number of people who place a high value on ecological integrity and conservation there are others who place a higher value on economic prosperity and their independence in regards to controlling their own land. This has led to passionate conflicts between some of the local landowners and staff from Parks Canada and Saskatchewan Environment. Many landowners felt that their livelihoods were being jeopardized by damages from the bison and Parks Canada and Saskatchewan Environment were placing a higher value on the herd than on their livelihood. Overcoming the differences in values between parties must be one of the first steps if an ecosystem-based management approach is to be implemented (Brussard et al. 1998, Slocombe and Dearden 2002). Both government agencies have to place a higher priority on the values of the local citizens and work to reach a common ground. Another way of accomplishing this would be through increasing awareness and education regarding the ecological significance of the bison herd through community outreach and education programs (Slocombe and Dearden 2002). Furthermore finding benefits for landowners, while rejecting initiatives that place an unfair burden on the impacted landowners would also help overcome differences in values between agencies (Slocombe and Dearden 2002).

Conclusion

Between 1989 and 2000, a national campaign titled the Endangered Spaces Campaign played a role in doubling the amount of protected areas in Canada (McNamee 2002). While this is a positive step for the conservation of Canadian landscapes it is not enough to ensure the long-term persistence of Canadian wilderness (Slocombe and Dearden 2002, Theberge and Theberge 2002). Instead, we must look at protected areas as just one aspect of a conservation strategy which recognizes the need to operate at a landscape scale (Slocombe and Dearden 2002, Theberge and Theberge 2002, Wiersma et al. 2004). A potential outcome of operating at this level would be the addition of privately-owned land, particularly land which borders a protected area, in conservation planning. This is especially important with regards to wildlife as, unlike many other natural resources, it is transient and routinely passes through politically defined boundaries, and thus requires the cooperation of numerous parties for effective conservation (Wiersma et al. 2004).

This research provided insight into wildlife management in the private/public interface, with a focus on the perspectives of local landowners and other interested groups. Wildlife management at this interface is complicated by issues of ownership, power and control over wildlife, and decisions surrounding its management in other jurisdictions (Borrini-Feyerabend 1996, Curtis 1998, Slocombe and Dearden 2002). Local landowners believe that decisions are made elsewhere regarding wildlife and that they have to deal with the consequences later. They expressed concerns over their lack of power or control over decisions that ultimately affect their livelihood. Consequently,

when concerns such as these are not addressed, it is not surprising to find landowners taking action.

This thesis supports previous research into how communities can work in partnership with other institutions at the private/public interface within the frameworks of collaborative and ecosystem-based management. Involving community members in collaborative processes is often difficult, as they are often unable to meet the time commitments required or they have other work priorities (Borrini-Feyerabend et al. 2000, Margerum 2001). Creating an organization that has representatives selected by the community, through a bottom-up approach, will facilitate the inclusion of community input into management decisions and thereby increase the likelihood of effective plains bison conservation (Cortner et al. 1998, Dudley et al. 1999b, Lane 2001).

5. CONCLUSION

Summary

Wildlife management is complex and often involves multiple jurisdictions. This study has been an investigation into plains bison management at the interface of public (National Park and Provincial Crown land) and private land (privately-owned ranch and farm land) using the framework of ecosystem-based management. In particular, this study attempts to address the potential role of local communities in management decisions through the creation of a community-based organization. The results of this study are not easily transferable to other wildlife management problems, as they are dependent on a number of different aspects which are unique to the situation. The nature of the community is one where people are often willing to put the good of the community as a priority. Furthermore, many of the people have been in the community for their entire lives and there are a lot of connections between families, leading to people who care about what happens to one another. This also leads to aspects of peer pressure, where people feel they obliged participate.

People are also very willing to engage in discussions surrounding the issue, as can be seen by the high turn out for the focus groups meeting. Part of this can be attributed to the idea of people feeling like they see no other option but working together and with other stakeholders towards mitigating the bison impacts. Finally, the results of this research are dependent on a number of key individuals who have done a lot of ground work in talking to the community about the bison on about how people can become involved.

The results of this thesis build on the recommendations of Bergeson(1992). In his thesis, he recommended that the Canadian Parks Service, now Parks Canada, initiate a public participation process with a focus on information exchange, creation of short and long term goals, and an interim management plan for the Sturgeon River herd (Bergeson 1992).This research takes these recommendations a step further by outlining the elements of a community-based organization which can represent community interests surrounding the herd while working with other agencies.

Key Elements for the Creation of Conservation Organizations

The first objective of this research was to determine key elements involved in the creation and continuance of existing conservation initiatives and how they guide the Sturgeon River plains bison herd conservation effort in central Saskatchewan. The first key element that was identified from a review of diverse case studies focused on the importance of community involvement. Involving and empowering the community are essential for effective conservation efforts. Landowners need to be included in making decisions that will ultimately require their cooperation or they will be unwilling to participate. This is but one example which reinforces the idea that through a collaborative approach an effective strategy for wildlife management at the private/public interface is possible.

Second, it is important to promote the benefits of wildlife conservation. This is particularly true in the case of the Sturgeon River plains bison where many landowners are experiencing negative impacts from a growing bison population and thus, they may

not readily see the benefits of having a free roaming bison herd in close proximity to their farms.

Third, although a true collaborative process was lacking from most case studies, it is recognized as a challenge to be overcome. For the conservation of the Sturgeon River plains bison, this is an important lesson to remember as the provincial and federal governments begin to work with an organization that represents community interests.

Finally, the fourth key element identified from the case studies is that effective communication between members and partners of an organization is essential. This can be accomplished through a number of means including mailing lists, newsletters and open meetings. Communication between members and partners will also play an essential role in conserving the Sturgeon River plains bison. Communication will be needed to help inform people as to what is happening, what services are available and how people can become involved.

An Organizational Framework for the Conservation of Plains Bison

This section responds to the second objective of this study, regarding the creation of a framework for a community-based initiative for bison conservation. There is strong support for a community-based organization in the area, from the community as well as from both provincial and federal governments. This organization is integral to finding ways to properly manage and protect the Sturgeon River plains bison herd. Comments from community members and government officials alike suggest that such organization should be formed prior to the instigation of management initiatives.

Through this research, the participants developed a vision for a community-based conservation organization for plains bison. The vision was composed of three main elements and included helping to mitigate bison impacts on private land, working with governments to influence policies surrounding plains bison management, and promoting conservation of the Sturgeon River herd. This vision reflects the views and desires of the community and will likely evolved as the organization gets established and start operating in the area.

The benefit of establishing such an organization is that it can act as an entity representing the community, a forum for people to discuss and come to agreement on resource management issues. This entity could then work in collaboration with Parks Canada, Saskatchewan Environment and other agencies to discuss diverse issues. The inability of the Buffalo Field Campaign to work with government agencies is an excellent example of why cooperation is important. The situation around Yellowstone National Park, particularly along the Montana border, is riddled with conflict, with members of the Buffalo Field Campaign engaging in acts of non-violent civil disobedience because they are strongly opposed to the management plan developed by the U.S. Government. If a system of consensus-based decision-making was used, with real participation from all interested parties, these conflicts could potentially be addressed. It is such a system that is being envisioned by the participants of this research.

The creation of a community-based organization for bison conservation is an opportunity for resource managers in the area to work with other members of the community. Effective partnering in addressing the issues surrounding bison management

will open the door for future collaborations among various interest groups on different issues. Conversely, if this partnership fails, it may become more difficult to deal with other resource management issues.

Structure and Governance

In chapter 4 the study participants clearly indicated that any community-based organization must be established and directed from with a bottom-up approach. Its governance structure should be decided through a process that is agreeable to all members and its main role should be to represent the community at large and not individual self-interest. Decisions made by the directors should be made through consultation with the members and the reasoning behind the decisions should be transparent to ensure accountability.

The axiom "It is easier said than done" is particularly accurate regarding the formation of a community-based organization which promotes plains bison conservation. While agencies are often willing to work together, in practice it is much more difficult. Parks Canada and Saskatchewan Environment have their own mandates and goals, which will differ from that of the local community. Consequently, a system of collaboration between the agencies, including one which represents local interests, must include working towards consensus in making management decisions in order to ensure the differing mandates are still met.

During the course of this research, it became evident that the research participants wanted to be involved in more then just decision-making. Members wanted to be involved in different initiatives, including educating people about the Sturgeon River herd, participating in economic initiatives (i.e. developing tourism operations around the herd), being involved in research projects (i.e. trying lure crops, buffer zones), and undertaking management initiatives (i.e. helping maintain fence lines).

Recommendations and Update on the Conservation Organization

The second and third objectives of this project were to create a framework for an organizational structure of a community-based organization and to make recommendations for the development of initiatives regarding plains bison conservation in and around PANP. The following section addresses these objectives and gives an update on the status of the organization.

As stated earlier, the current views and desires of the community is to create an organization that will promote bison conservation in the area, mitigating impacts on private land and influencing policies surrounding plains bison management.. Furthermore, the organization must incorporate the concerns of people who are experiencing the most impact from an expending bison herd in making management decisions.

The current structure of the recently formed governing body of the organization is a combination of a four person executive and a larger management board. The executive is composed of four people including a president, vice president, secretary and

treasurer. The primary role of the executive is in running the day-to-day operations of the organization and attending meetings, both internal and external to the organization (Vaadland 2006).

The management board is composed of nine people, with representatives from local landowners, the Saskatchewan Wildlife Federation, the Saskatchewan Bison Federation and the tourism industry (Vaadland 2006). The role of the management board is to work to implement any initiatives. Potential examples include administering a compensation program and a fence repair program (Vaadland 2006).

The board and the executive members were not determined by the entire community, but instead by a small number of people (Vaadland 2006). It is recommended that these positions be temporary until a general election can be held so that all members of the community have a say. This will help ensure that nobody in the community feels marginalized and therefore unwilling to participate in the organization as a member. Based on the interviews and the information gathered during the follow-up meeting, it was agreed that a general election for the executive would work best. This may help address concerns of marginalization occurring that were expressed; particularly by people who live adjacent to the Park as they often experience the most impact. Furthermore, the current structure does not reflect what was recommended at the focus group meeting. It was felt that the board should be structured and that one person be elected per municipality, one person who lives adjacent to the Park, one person who represents economic interests and potentially one person from each of the aboriginal communities. There was no mention of the Saskatchewan Wildlife Federation or the Saskatchewan Bison Federation. While both institutions have a significant stake in bison

management, more discussion should ensue to determine what level of input these institutions should have in the community-based organization. It may be that these organizations should work in partnership as a non-voting member, similar to what has been recommended for the roles of Parks Canada and Saskatchewan Environment.

The organization is still in its infancy and has yet to develop a system of governance. Ultimately a set of bylaws or a constitution should be developed. Furthermore, transparency should be a critical element and should be respected by the management board. Minutes from meetings should be created and distributed to members. In addition, other venues promoting transparency should be initiated including the production of annual reports, the conduct of open meetings and a newsletter.

Decisions should also be made by striving consensus whenever possible. While many people felt that consensus-based decision-making may stall the process, it is important to ensure that everyone feels they have a voice at the table. If at some point it is felt that consensus cannot be met on a specific decision, a vote should be taken and a two-thirds majority be obtained prior to adopting a position.

The organization should also consider giving specific roles to each of the directors in accordance with the four different themes identified in the initiative working group. There could be a number of working groups focusing on management, mitigation, education and economics issues. Volunteers from the membership would then know who to contact regarding specific issues should they wish to become involved (i.e. contact the director of mitigation if they wish to help with administering the compensation program).

Finally, this organization has the ability to use an ecosystem-based management approach towards building conservation. Furthermore, collaboration is needed to encourage success in both its own operations and when working with other agencies. Through a thematic analysis of the interviews and the follow-up participants meeting ,Grumbine's (1994, 1997) principles of ecosystem-based management appear to meet the desires of all of the participants. This suggests that Grumbine's principles can be used by the organization to help guide its development. By using these principles, an effective strategy for dealing with the social, economic, and environmental impacts of the Sturgeon River plains bison herd can be developed. It is important to note however that this organization is in its infancy

Study Limitations

As with any research project, this study is not without its limitations. In particular, the lack of First Nations interviews poses a limitation in that the research is missing an important perspective regarding plains bison management. While I did attempt to interview some members from the Big River First Nation and Ahtahkakoop First Nation, both of whom expressed interest in participating extenuating circumstances resulted in poor timing. Consequently, this research does not speak from the perspectives of First Nations. This limits the results of this research in that I cannot draw conclusions regarding First Nations perspective on a community-based conservation organization. This prevents me from fully conceptualizing the structure. This does not negate my findings, instead it highlights opportunities.

This study is limited both spatially and temporally. The research conducted is only applicable for plains bison conservation around PANP and will not easily translate into other wildlife management concerns. The conclusions of this study are the result of the mix of different values, opinions and perceptions that exist in the area. Furthermore, these values, opinion and perceptions can, and often do, change over time as a response to economic pressures and employment. This can be further compounded as people immigrate and emigrate from the region. Consequently, the results of this study may not hold true through the rigors of time.

It is important to note that some of the conclusions for plains bison management around PANP can be generalized for other wildlife management issues at the private/public interface. This is supported by comparing the common trends found through the four case studies presented in chapter 3 and their applicability in managing the Sturgeon River herd.

Another limitation exists in the form of the validity of the data, as there is an inherent bias from any researcher when conducting research (Merriam 1998). In this case, I designed the questions I wanted to ask in order to get results to a set of research objectives I established. A number of strategies was used to overcome this inherent bias and demonstrate both the internal and external validity of my results. First, the questions I was to ask the interviewees were submitted and approved by the Joint Faculty Ethics Review Board of the University of Manitoba. Second, participation in the research was voluntary and participants could choose to decline to answer a question or withdraw at any given time. Participants were also given the opportunity to review their interview transcripts if they so desired (Kirby and McKenna 1989, Merriam 1998).

The thematic analysis of the data was conducted with a grounded approach, where the themes were identified by the data analysis based on question generated through the literature review. A grounded approach lets the data develop the question, not vice versa (Neuman 2000). It should be noted that Grumbine's (1994, 1997) ten principles of ecosystem-based management were used to analyze the themes generated through the analysis and not the other way around.

Finally, the results of the data analysis were presented to the community, a process termed member checks, for their review and input. The participants did not disagree with any of the findings, but built on some of the findings during the focus group meeting. This process was extremely important in validating the trustworthiness of the data (Merriam 1998).

Future Research

The members of the community have indicated that they are interested in having future research conducted in the area. In particular, they would like to work alongside researchers in trying small-scale experiments which test various measures to deter bison from crossing onto private land. Furthermore, while there is a lot of research happening within PANP in regards to bison habitat and browsing preferences, little, if any, researc has been done on fields with high rates of bison excursions to determine why bison are selecting these fields. This gap in knowledge should be addressed so that there is a better understanding of why bison are choosing specific fields.

Other research opportunities include the facilitation of discussions between the Big River and Ahtahkakoop First Nations and other First nations with a relationship to bison herds (e.g., the Chitek Lake and the Broken Head Bands in Manitoba). This research could include work with elders/ historians/ archaeologists to describe the historic relationship of bison/ people in the area. Finally, the Sturgeon River Plains Bison Stewards is only within its first months of creation. An excellent research opportunity exists for someone to document the organization's evolution and analyze any changes in the role of community involvement in wildlife management decisions in the region.

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APPENDIX A: Interview Schedule

Name:
Date:
Location:

	Yes	No
Consent form signed?		
Wish to review interview transcription prior to publication		
Desire to participate in confirmation group?		
Findings requested?		

Do you want your identity to be revealed or kept confidential?

SECTION 1: Background Information

1. How long have you lived at your current residence?

2. How long have you lived in this region?

3. What role do you think the bison play in this landscape?

    a. Describe any changes you have noticed in this role over time.

4. Can you describe any times in the past 5 years where you have seen bison?

    a. How many did you see?

    b. What were they doing?

    c. Where were they?

    d. Did bison result in any changes to your property? If so what?

    e. What are the positive and/or negative impacts of bison expansion that are of most interest to you?

5. Describe any educational information you have seen about the bison herd in the area.

    a. Where did you see it?

    b. What information do you feel was missing?

SECTION 2: Collaboration

Stakeholder Involvement

6. What are some of the conservation needs / activities that could be undertaken?

    a. How could better bison conservation benefit you as an individual?

    b. How could better bison conservation benefit your community

    c. What are some priorities for you as an individual?

    d. What are some priorities for your organization

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e. Who should be involved in dealing with the conservation of bison and what role could they play?

7. What is your opinion towards establishing an organization that works collaboratively to cope with the social and economic aspects of bison conservation?

   a. Would you be willing to participate in an in such an organization? If yes, how? If no, for what reasons?

   b. What barriers do you feel may inhibit the creation and continuance of such an organization?

   c. What factors do you feel may encourage the creation and continuance of such an organization?

   d. How do you think funding for such an organization could be attained?

8. How could we promote this idea to increase support and participation? (word of mouth, internet, speaker, etc)

Fairness

9. When developing a process for bison conservation, what do you think needs to be considered to ensure fairness in the process?

   a. Pursue representation.

   b. Pursue consistency.

   c. Pursue suppression of self-interest (how can we ensure this?)

10. What, if any, barriers towards trust between all agencies exist? How do you think we can overcome such barriers?

11. What factors or criteria do you think should be involved in determining who benefits, and how much, from bison conservation?

Consensus and Power Sharing

12. How should the decision-making body of this organization be structured?

13. How do you think decisions should be made?

Transparency

14. How transparent do you feel that the creation of a conservation initiative for bison should be?

    a. How transparent should its decision-making process be?

        i. Who is included? How is the decisions making body chosen? Etc

    b. How do you think this transparency could be attained?

Conclusion

15. Are there any members of the community you think I should include in this study?

16. May I contact you again if I require further information or clarification for my research?

APPENDIX B: Written Consent Form

Natural Resources Institute

UNIVERSITY

OF MANITOBA

70 Dysart Rd,
Winnipeg, Manitoba
Canada R3T 2N2
General Office (204) 474-7170
Fax: (204) 261-0038
http://www.umanitoba.ca/academic/institutes/natural_resources

Research Project Title: COMMUNITIES FOR CONSERVATION: Creating a framework for plains bison conservation in central Saskatchewan.

Researcher: Jason Kelly

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of this project is to identify what is needed for the creation of a community-based conservation initiative which would contend with the impacts of bison on private land. This will be accomplished by looking at similar organizations that are established for other issues and interviewing members of local communities for their input on what is required.

You may be asked to participate in:

Semi-structured interviews: you will be asked a series of questions that will enable me to understand what you feel would be expected for such an initiative, who should be involved, what type of commitments should be expected and what issues need to be addressed and in what order. Interviews have no set time limit so that you do not feel either rushed or obligated when stating your ideas. Your responses will be recorded so that they may be later transcribed for analysis. You will be given the opportunity to review this transcription prior to its use for analysis, at which point you can decide to withdraw your interview from the project. Furthermore, your name will not be released to anyone besides the researcher, ensuring your anonymity.

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Please indicate whether or not you agree to having your responses to questions recorded for transcription by the researcher by initialing in the yes or no box.	Yes	No

Confirmation Meetings: You will be invited to participate in a participant meeting at the end of my interview period to review my analysis of the information collected in order to ensure I am not misinterpreting anything. These focus group discussions may be held at the local community centre or at a similar central location. Responses will be recorded on a flipchart and the identities of individual participants will not be noted and will remain confidential. Finally, at the end of my research, a copy of my finding will be made available to you for further comment and feedback.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

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This research has been approved by the Joint-Faculty Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

_____

Participant's Signature   Date

_____

Researcher's Signature   Date

APPENDIX C: Interview Results Summary

	Frequent	Infrequent
Role in Landscape	-Make it miserable, nuisance, fence smashing, rolling in crops, not safe to walk. They cause damage! -Nice to have in the Park, don't want too many outside the Park though. -They have a historical significance. -No real significance -Nice to see -Potential for tourism. -Nice to see but becoming a nuisance. -It's a pain in the ass.	- I think they are just...personal interest. When they first came here boy people were coming from town here just to see them. - This herd isn't truly wild. It came from a captive herd. - Same as other wildlife, I don't mind seeing some. - They are unique and increase the biodiversity in the area. - It's the only free-ranging herd in Canada.
Negative Impacts of Interest	- Once the numbers get to a certain point they could start doing some damage, that's for sure. - They are being seen outside of PANP more, destroying more crops and pasture. - I'm worried about fence damage and the bison getting in with my herd. -More damages, particularly to fences.	- Possible disease transmission, increasing damages, fear of bison when rutting, chase out elk. - My wife is scared to go for a walk. - Also if they crowd out the elk. - Where are they going to move to? It creates more work for conservation officers.
Positive Impacts of Interest	-I'd like to see a hunt -Well, they're nice to have around. How many...they're unique. I mean how many herds of wild buffalo do you have in Canada that are actually walking across your land? -There are no positive impacts. -I'd like to see a hunt -There is a need for tourism in the area and we need to increase access to this area and the Park.	- Expansion is good for the genetic diversity of the herd. - On a positive side they keep the meadows open - The stray bulls should be disposed of via some means (food bank) - They provide an aspect of cultural heritage, ecological integrity
Mitigation Ideas	- Compensation for damages. - I think they need more pasture in the Park. Let the fires go up, it'll open it up some. - Provide a legal hunt! - Keep them in the Park using fencing, - We could award depredation licenses where farmers can kill a bison if they are causing damages and keep the meat.	- Destroy the strays! You should let the farmers take one, have a draw. - Need a patrol on horses. The bison are good for tourists and nice for kids to see. - Grow lure crops, - Compensation as a last resort, as compensation might promote reoccurrences. - Fencing them in is not feasible. - We need better education and communication, a better understanding of what types of crops are practical to grow so that they reduce bison troubles, we need farmers to fence some of their

		land.
		- Most importantly we need to offer stewardship funding and not compensation.
		- Culling should only be an option when they are a bigger nuisance.
		- Better tourism promotion and education is also needed.
		- There shouldn't be any compensation…if you live here take the lumps
Opinion Towards Grassroots Initiative	- They need something like that. - Good idea. Has to be done. - Would help people know what the rules are.	- I don't think it would work
Perceived Personal Benefits	- It would decrease damages and reduce operating costs. - Decrease the cost to me - We'd like to hunt one.	- maybe make some money off tourism. - Social benefit of seeing them and it's nice to know the herd is being preserved.
Perceived Community Benefits	- Get some ecotourism going. -Decreasing damages reduced economic impact - Possible benefits from ecotourism	- Broaden the scope of education for young children, makes people think of the benefits of nature.
Priorities	- Reducing damages and getting some sort of compensation. - Provide a legal hunt! - Compensation for damages. This would be cheaper than using a helicopter to chase them off. - Eliminate the bachelor bulls	- Road crossings and stuff like that I suppose. - Parks Canada to take care of lone bulls and to control the population - Fence them into the Park. Licenses will make people feel like they can hunt wherever, especially if in a draw. You will have people running all over the land. - I'm ok with the status quo.
Who Should be Involved	- Well I guess those three groups of people, SERM, Parks Canada and local residents that are basically directly involved. - Parks Canada, SERM, landowners, First Nations.	- Nobody will make a decision that will protect the ordinary person. The stakeholder group is on the wrong track, SERM and PC shouldn't be involved and the locals won't stick up for themselves. - Local landowners to meet their needs, PC and SERM to provide information, public at large for input but locals cannot carry the burden. - Ecotourism operators, visitor groups, First Nations and farmers/ranchers should play an active role in decision-making while PC and SERM should play an advisory role. - Furthermore, the RM's should be involved in decision-making to help ensure the project stays community focused.
Barriers	- Negative opinion - None exist. - Diversity of opinion and perspectives	- It's hard to say. It's hard to get people to agree to things. - Somebody would be after something for nothing.

		- Time and energy commitments, - lack of funding, - inertia of government behaviour and inability to change and mesh with other government departments.
Promoters	- Maybe if damages get to big, people will want it. - Compensation could get people together. - Good support in most of the community. - having more events, more walks in the Park, more access to this side of the Park. By photos, bringing the school kids out to see the animals and things like that. Short movies, tv spots…I really think that what they need is promotion.	- I suppose that if you bring people in to see bison like you do for the Park there. That walk-a-bout or whatever they do. - Legalize some hunting (impacted) - People won't speak out against it in public. - Showing positive results and following the recommendations from the community.
Fairness	- I suppose with good communication and stuff. - Make sure you cover a wide range of interests. - A wide range of representatives, stronger voice to ones along the Park. Representatives should have long terms and ensure that they are unrelated. - The crop insurance folks would be good to keep it fair. - Representation should cover most people but impacted people should have more influence.	- Parks Canada won't take responsibility for bison. It should be PC, SERM and farmers to make it fair but SERM has an agenda. It is impossible to suppress self-interest. - Needs to have a board of people that has fair representation and terms. New blood is needed periodically. - Representatives should have terms to keep consistency. You'd also have to keep and eye out for people there only for - Include a fair range of representation weighted towards those impacted. Maybe First Nations shouldn't be included. - You need to have a good facilitator to start. You also have to make sure that the representatives are truly representing their people. There should be a change over in representatives over time and it should be staggered to minimize confusion.
Barriers to Trust	- Some between government and landowners (both ways) - Lack of trust with SERM and PC from community. Perceived lack of trust from SERM and PC towards community.	- No barriers. Just get rid of the bureaucracy. Come talk to people. Spend more time on the west side. - PC and SERM have issues. Kind of iffy all around. - Landowner vs. Urban, Redneck vs. First Nation We need to get SERM to be more receptive with higher level of communication between SERM and PC. Barriers are not as existent at the local level but are at higher levels. There is more concern about the bison ranchers' federation.
Factors in Decision-making	- Prove damages. Show attempts to recover. - Vigilance needs to count. Decisions	- If they impact someone's land. I don't care about the significance of the damage. - If you're making money from the herd

	should be made by inspectors from the group, not outside parties. - Damages only, not perceived damages. Should be some level of due diligence. - Develop guidelines via consultation with the community.	you should contribute to help those impacted by it. - Hunt by draw, cover any time, no due diligence - Decisions like this need to involve more than just local people. - Rules and regulations are needed and should be developed by the team.
Transparency	- It should be very transparent. - Should be very transparent to help prevent abuse. - Everything should be available	- Mostly transparent, but people don't have to know how much everyone gets in compensation. - There should be a summary of the minutes where decisions are made by the group and it shouldn't individualize decision-making.

APPENDIX D: Summary Update

The Sturgeon River plains bison (*Bison bison bison*), in Prince Albert National Park, is continuing to increase in size, with 389 animals being spotted during the 2006 aerial bison survey. This is an increase of approximately 80 individuals from a previous estimate of 320. There have also been an increasing number of incidents of bison being spotted outside the Park, including a large excursion of over 100 animals last year. In response to this, and the increasing damages associated, over 20 animals were killed on private lands during 2005 in two separate incidents. The increasing number of bison, and consequently the large kills of the past year, indicates that something needs to be done in order to ensure that the bison herd continues to remain healthy without causing undue hardships to the surrounding landowners. While the original idea of my research was to determine what is needed for a community-based initiative the above incidents reinforced the importance of conducting this research. Consequently, I departed for the field in early June.

Initially, I spent a lot of time going around and meeting people in the community. This was important as I needed to gain an appreciation for what people engaged in farming, as well as those just residing near the Park, were experiencing. This was an interesting and exciting way to spend my first month. I had a lot of new experiences including driving my first tractor! After this period I began my interviews and completed a total of 42 before prior to returning to the University at the end of the summer. I interviewed farmers, ranchers, local landowners, tourism operators and members from Saskatchewan Environment and Parks Canada. There were six general topics covered during the course of the interviews, and are summarized in table 1.

Table 1: Topics Covered in Semi-Structured Interviews.

Topic	Description
Background Information	Questions designed to gain a historical perspective and to gauge attitudes toward bison in the area.
Stakeholder Involvement	Questions designed to assess the priorities for individuals of diverse interest groups, who should be involved, level of participation, identify barriers to creation and continuance of bison conservation, etc.
Fairness	Attempts to determine what is required to ensure conservation decisions are fair to all those involved.
Consensus and Power Sharing	Investigates how those involved envision an effective decision-making group and how they feel decisions should be made.
Transparency	Importance of transparency and accountability in the process and how such information should be disseminated.

The discussions around these questions were very interesting, and the information collected was invaluable. While there was a wide range of answers for each of the topics, there were also a lot of similarities, even between different stakeholders. It is upon these similarities that a process for socially and ecologically responsible bison management can begin. Table 2 is a summary of the initial insights based on the topics in table 1.

Table 1: Initial Insights into Topics Covered in Semi-Structured Interviews.

Topic	Description
Background Information	- People who were around for the initial release tend to view the bison as more of a nuisance. - Younger generations tend to be more tolerant of bison, see the bison as something that's always been there for as long as they can remember.
Stakeholder Involvement	- There is a role for all levels of government to play - Parks Canada Agency and Saskatchewan Environment should be there as advisors.
Fairness	An overwhelming number of people feel that the biggest priority in decision should go to those that are most impacted.
Consensus and Power Sharing	- Everyone involved in the decision-making is to be considered an equal to all others participants. - Impacted people must have a strong voice in decision-making
Transparency	Everything should be transparent to the community. No reason to hide anything from anyone.

The interviews also demonstrated that there is a lot of support for such a community driven initiative for coping with the impacts of the bison herd. The next step is to do some follow up work, including completing a few more interviews and conducting a meeting with all interested individuals. This meeting will allow me to present my initial findings to members of the community and to have the opportunity to get some feedback as well as engage in working groups to discuss some topics that need further exploration. Subsequent to this, I will be writing my thesis as well as a shorter report for submission to the all involved with recommendations for how to initiate the process and how to ensure its continuance.

APPENDIX E: Notes Generated from Participants Meeting

Structure and Governance
- *Wide/inclusive representation*
- *Impacted people should have more influence*
- *SERM and Parks Canada should be involved*
- *First Nations*
- *Vigilance needs to count. Decisions made by the group/no outside parties*
- *Process should be transparent*
- *Decisions made by consensus (or a form of)*
- *Information available to all*
- We need participation from groups on opposite ends of the spectrum ecotourism (farmers/ranchers/landowners)
  - Going to be a problem to bridge options
- Community-based – keep it that way
- Structure should follow wildlife federation, ducks unlimited, etc – look into how they started. Don't reinvent the wheel
- Start locally (local stakeholders) – possibility of expansion, inclusion of government org. (how to do it)
  - Partners
  - Important to keep grassroots as groups might what to take advantage of it.
- Landowners, SERM, RM, Parks Canada
- How to establish memberships – interest, buy membership (keep it low), locals
  - Anyone can be a member but keep executive local
- How to help with transparency
  - Annual reports – to members and community
  - Establish rules
  - Public meetings
  - Bison Times – submit articles
  - Annual/monthly newsletter
  - Chronicle
  - Regular meetings to report on activities
- Board of governors
  - Geographic
  - Interest group
  - 1 person elected per region (RM), landowners, economic interest groups, potential for First Nations (people ready to commit right now)
  - Partners with Parks Canada, SERM and NGO's.
  - Keep it small
  - Nominations first then elections
  - Term of office staggered
  - Have to set a duration for term
  - Make positions desirable (dinners, fun, etc)
  - Not sure about honoraria
- Decision-making (large membership with a small board of governors)

- o Power sharing with the right composition
- o Charter and mission statement (provide examples)

Vision
- *Promoting conservation of plains bison*
- *Bridge the gap between government and communities – develop trust*
  - o *Decision-making, communication, partnerships*
- *Getting a stronger voice (communities)*
  - o *Decision-making, communication partnerships*
- *Ability to provide education/expose school kids to local conservation efforts*
  - o *Education*
- *Economic development*
  - o *Concerns over what you can say in front of people so it wasn't significant in the discussion.*
- *Accessing and sharing information*
- *Stronger ownership of local resources*
  - o *Empowerment*
- *Influencing policies*
- Why should 1 benefit while it costs others
  - o Focus on the right issues, not on making money when others are impacted
- Policy that effects local people not the rest of the province
- Plant alfalfa or other better feed in the Park to convince them to stay in the Park
- Compare the difference between different animals (bison, elk moose) concerning attitudes to damage
  - o Understand attitude and drivers
- Compensation for damages is hay bales left on fields not only in yard stacks
- See a draw tag (funds to support compensation for damages, farmers could sell depredation tags)
- Aboriginal involvement (seems to work so far)
- Report the use of Aboriginal Hunters to control problem bison
- Fund raising ideas
- Identify the leaders of the groups (old bulls) and deal with them
- Identify options that could divert the excursions out of the Park onto private land
- Promote partnerships with other NGO's
- Possibly use funds to buy local land to create a buffer zone

3 Fundamental Visions to be pulled from this
1. mitigate damages (due diligence)
2. influence policy
3. conservation

Initiatives
- *Compensation*
- *Land management inside and outside of the Park (crops, fire, etc)*
- *Depredation*
- *Securing funding for the organization*

- *Sharing information*
- *Research (sustainable plains bison population size, carrying capacity, identifying potential areas for herd's expansion)*
- *Influencing provincial policies (hunting, crop damage)*
- Compensation – short and long term, high priority and has to meet the needs
    - o Other then financial compensation
        - Wranglers – eliminate the problem before it starts
    - o Every landowner gets x$ (some years you win, some you lose)
    - o Help repair damages with people, not dollars
- Permission to shoot bulls might be okay short term
- 'Emergency Action Group'
- Ideas can go beyond bison – managing other wildlife species
- Short term – need way of education public on bison and issues
    - o Spread the word provincially, dealt with son
- Access affects public visibility of herd
    - o Improve the infrastructure (west side road, small Parking lot, trail is15km
- Eventually compensation may cost more then we can afford – need to deal with the bison
- Double fence and plant trees between wild and domestic
- Burning inside Park as attractant
- Sharing information – if landowners try 'experiments' share the info!
- Devise communications system to share information (community at large)
    - o Newsletter
    - o Meetings
    - o Get kids involved
    - o Presentation (community events)
- Push Park to be more 'user friendly' (more access to locals)
    - o Visitor centre for bison
- Need economic base – keep infrastructure, increase value of land
- Prevention – try clearing some busy along preexisting fence line.
- Compensation-tag system for key animals (ones leaving the Park)
    - o How do divvy tags
    - o Draw? Not province wide
    - o Only neighbours
    - o Those who get damage
    - o This organization controls who gets tags
    - o Auction tags for $ = fundraising
        - Generates income for outfitters
- What better form of $ compensation?
    - o Subcommittee of group as 'adjuster'
- Need enough funds to be sustainable
- The money should come from all Canadians
- Need the lobby power to get funds from government
- Need 'vigilante' group
- Need to get involved with health of herd

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- Keep population down
- Tourism – buy a cheap quarter section of land and bring people in
  - Protect adjacent landowners
- Value of land increases as people recognize the uniqueness
  - Need to promote it
- Give a calf for Christmas
- Incentives to plant crops unattractive to bison (i.e. Canola)
- Take out animals that teach others to come out
- Give the land to the bison and pay a $/acre
- Put fence at acceptable distance from the Park
- There are negative security issues related to increased traffic from tourism
- Interpretive center private not public
- Get bison in Ness Creek
- Photography expeditions
- Paid access onto private land
- Plant alfalfa in the Park
- Art retreat – raffle the 'vacation'
- Contact other similar organizations
- Buy/rent land to 'buffer' Park