

# STURGEON RIVER FREE-RANGING PLAINS BISON POPULATION: DEVELOPING AN INTER-JURISDICTIONAL MANAGEMENT STRATEGY

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## **SUMMARY**

There are free-ranging plains bison in the southwest quadrant of Prince Albert National Park and the neighbouring regional ecosystem. This is the only free-ranging plains bison herd protected in a national park within their historic range in Canada. The bison summer range is adjacent to an area of mixed agricultural activity ranging from grain farming to livestock farming and game ranching. The bison are free to move outside the park and, to date, only individuals and smaller groups occasionally do and spend from a few days to months outside the park. The bison population continues to grow from a founding remnant population of 10 or more bison from a provincial release in 1969. The population numbered in excess of 320 bison in the summer of 2002.

The development of an Inter-jurisdictional Bison Management Strategy is underway and progress will be discussed. A successful management strategy for a free-ranging plains bison herd in this situation will require the support and cooperation of local land owners and stakeholders, the National Park, Saskatchewan Environment, First Nations and the public in combination with critical scientific and practical input into the strategy. Recent research on the spatial and temporal use of habitat by this bison population through a range of scales from the plant, patch, meadow to landscape levels have shed some light on the behaviour and use of their biotic and abiotic environment. Current research is investigating the relative connectivity and fragmentation of bison habitat within and outside the park to predict which directions bison are most likely to move. Using this information, appropriate management actions can be planned and implemented to influence bison movements if it becomes necessary. Actions to influence their movements would attempt to allow them as much freedom as possible to move into acceptable areas and avoid high potential conflict areas, reducing the occurrence of impacts on local land owners. Currently the bison have significant general support among local landowners. This local support is important and must be nurtured through good communication and involvement in planning and strategy implementation. Completed and ongoing research findings along with the strategy development process are discussed briefly.

## **1. INTRODUCTION**

Plains bison, *Bison bison bison*, were once the dominant herbivore on the Great Plains of North America. The limits of their distribution included the southern portions of what today is Prince Albert National Park (PANP). The vast herds of plains bison were reduced to near extinction by the late nineteenth century (1). It was mainly through the initiative of private individuals, and eventually government that steps were taken to reintroduce plains bison onto Canadian public lands (2). Some of the descendents of those bison ended up in Elk Island National Park (EINP) and became the founding population for most plains bison herds in Canada.

In 1969, the Saskatchewan Department of Natural Resources obtained 50 plains bison from EINP and released them in the Thunder Hills about 60 km north of PANP with the hopes of eventually providing an additional food source for First Nations people in the area. The bison did not stay in the release area but dispersed into small groups and generally moved in southerly directions. Most of the bison were recaptured and released in other areas or eventually shot. A number of the bison moved into or through PANP and it is estimated that 10 or more remained in the park and formed the nucleus of the Sturgeon River herd. The bison that stayed in the park eventually established a home range in the southwest quadrant of the park where appropriate habitat conditions exist.

After an apparent slow start, the Sturgeon River Plains Bison population has consistently grown at a rate of 10 to 14% per year and currently numbers at least 320 adults and calves (summer 2002). This

population is unique in Canada as the only free-ranging or wild plains bison population primarily within a national park and perhaps the only wild herd clearly within the historic plains bison range in Canada. These bison are again beginning to fulfil their natural role within the ecosystem as they re-establish themselves within it. The regional ecosystem now contains the full array of native ungulates along with their predators.

## **2. PHYSICAL CONTEXT**

The home range of the bison population is currently centred primarily in a 500 square kilometer area in the southwest quadrant of PANP. The bison generally inhabit the larger southern sedge meadows during the non-winter seasons and the smaller more northerly meadows and forest during the winter. The Sturgeon River forms the park boundary for the middle and southern portions of their range. While the river is not a barrier to cross boundary movement it does appear to act as a deterrent or impediment to bison movement out of the park. In spite of this, bison do occasionally cross in winter and summer and there may be 5 to 10 bison outside the park at any time. Bison in agricultural areas occasionally damage fences, roll in or otherwise damage crops or harass or fight with livestock on a bison ranch in the area. The current level of bison activity outside the park is generally tolerated by most residents, however increased activity may lead to intolerance of bison in the area. Along the park boundary, north of the Sturgeon River and extending to the northwest outside the park, is land which appears similar to the summer range within the park and is not intensively used for agriculture. This area may be suitable bison habitat should bison begin to expand beyond Park boundaries. There are also areas within the park where bison are making exploratory movements into areas that could function as additional bison range in the future.

## **3. PURPOSE**

The bison population, in the absence of significant predation in spite of a healthy wolf population, is continuing to grow at approximately 10% annually and will likely undergo pressure to expand its range and may begin to venture into areas where they are not well tolerated in larger numbers. The purpose of the Inter-jurisdictional Bison Management Strategy is to maintain an open dialogue with stakeholders and develop a strategy to manage the expanding regional bison population to prevent problems and deal with issues should they develop.

## **4. DEVELOPING AN INTER-JURISDICTIONAL BISON MANAGEMENT STRATEGY**

### **4.1 Scoping Document**

A Scoping Document was prepared to provide a framework for developing the Bison Management Strategy. The draft document was prepared by PANP and Saskatchewan Environment (SE) and included a suggested composition for a Strategy Development Team, a vision and principles to be followed during the development of the Strategy, a list of issues that will likely need to be addressed, the need for science and experience to be incorporated into decision making and the proposed consultation and communication process during development and approval of the final Strategy.

At the first meeting of the original Strategy Team the Scoping Document was reviewed and modified to meet with the approval of the team and a terms of reference was established for the operation of the Team.

### **4.2 Strategy Development Team**

The Strategy Team originally proposed was to have only 8 members so as to keep it small enough to be an efficient working group. Members were to participate by communicating their perspectives from their personal experience in various sectors of local, regional and provincial society with less emphasis on sectoral representation. However, two local municipalities requested to have direct representation on the team and were subsequently added, increasing the team to 10 members. During the first meeting of the Team, the non-government members requested that a local Park Warden and Conservation Officer also be added to the Team to have direct input from the operational perspective. The Team now contains 12 members with a combination of sectoral and non-sectoral interests:

- adjacent land owner (1)
- visitor dependent regional business (1)
- First Nations in the area (1)
- livestock ranching (bison) (1)
- Provincial/National environmental org. (1)
- Provincial Wildlife Federation (1)
- Rural Municipalities (2)
- Saskatchewan Environment (Biologist and Conservation Officer) (2)
- Parks Canada (Biologist and Park Warden) (2)

#### **4.3 Team Vision**

The team vision for the bison population and its management is as follows.

- The Sturgeon River Plains Bison are a self-sustaining, naturally regulated, genetically diverse and free-ranging population.
- Local stakeholders, regional and national public continue, or grow, to understand, support, appreciate and experience this unique wildlife population.
- The West Side Bison Management Group continues to function as an avenue to consult and communicate on relevant local bison and other management issues (this group and forum was created in 1993 in response to a recommendation in a thesis by Doug Bergeson (3) and has functioned well over the years).
- The Sturgeon River Plains Bison Population contributes to plains bison conservation and to the well being of local, regional and national peoples.

#### **4.4 Principles**

The principles of management to be followed during strategy development and implementation are outlined below:

- The regional bison population must be large and diverse enough to be self sustaining in perpetuity considering the variations in natural processes that affect bison and are affected by bison.
- The population must remain free-ranging within the regional ecosystem.
- The bison population should primarily remain regulated by natural processes but where additional management actions are necessary, the techniques employed should as far as possible be natural or mimic natural processes.
- Bison management practices must be based on sound science or on practices that have a record of demonstrated success. Preference will be given to those methods which are least intrusive to the bison and ecosystem.
- Research on the bison population or their habitat should be encouraged if it has the potential for improved understanding and management of the herd.
- Impacts of the bison on landowners and stakeholders directly affected by the bison herd should be within broadly acceptable and sustainable levels to maintain landowner and stakeholder support for this unique and valuable component of the regional ecosystem.

- If necessary and feasible the bison population should be encouraged to expand into areas where they are not likely to cause difficulty for the agricultural industry.

#### **4.5 Some Identified Potential Benefits, Issues and Concerns**

The impact of the growing bison population on the residents and public is expected to be both positive and negative and will largely depend on where people reside and their feelings towards the herd. It is anticipated that there will be some potential for economic benefits in the region from additional visitation to witness free-ranging plains bison in a natural context. This could directly contribute to the small scale hospitality, ecotourism and outfitting industries in the area. Social benefits would be expected for regional residents who would have the opportunity to experience this unique spectacle at their own convenience at any time of the year. If the bison population eventually becomes well established outside the park, there may eventually be the opportunity to harvest some wild bison as an additional food source either through subsistence harvesting or private and outfitted sport hunting.

As has occurred in the past, farmers and ranchers in the proximity of the bison range will likely continue to experience occasional damage to their infrastructure (fences) or crops, or conflicts with livestock when bison come into areas where they are not well tolerated. As with all wildlife, there is also the possibility of disease transmission between livestock, bison and other wildlife and back to livestock. At the present time we are not aware of any serious disease in the bison population that is of concern to local livestock producers. As suggested, these concerns are not limited to bison but extend to other wildlife species as well.

Bison were once the dominant herbivore of the prairies and as such, when they reinsert themselves into the ecosystem as they have in a portion of the park, they will cause change in the ecosystem to some degree. This should be considered a desirable outcome; however, it may be perceived otherwise by people who do not understand what is occurring. A properly prepared Bison Management Strategy with good implementation should enhance the positive aspects of the bison in the area and reduce the negative impacts.

#### **5. INTEGRATING SCIENCE AND EXPERIENCE INTO THE STRATEGY**

In anticipation of the plains bison population expanding into neighbouring jurisdictions and private land, research was initiated on the bison herd to gain some additional understanding of the bison within the specific environment in which they exist and are likely to move. Building on the work done by Bergesen (3) in the early 1990s, Fortin (4) conducted research in the late 1990s to investigate the habitat, habitat use, behaviour and related movement patterns of bison, primarily within the park because few ventured outside it. Many of the findings are likely to be useful in developing the Bison Management Strategy and possibly, in predicting where bison are likely to expand their range and the potential number of bison and season of use that range is likely to support.

Some of the relevant findings reported by Fortin (4) include but are not limited to the following: meadows were used 7 times more than expected relative to their area, and meadows were selected for their physical features rather than forage. This selection was apparent within 1.3 km in summer and 2 km in winter. During summer, larger meadows with water would increase the likelihood of its use. In winters with deep snow, meadows with less snow depth and near other meadows were more likely to be used. Forage quality or the proportion of the most commonly used forage, *Carex atherodes*, had little effect on meadow choice.

Fortin (4) also found that within a meadow bison used a short term rather than a long-term energy maximization strategy when feeding. Bison did not take time to search for the highest energy species but maximized intake by utilizing the more available species of lower but adequate energy. In summer there was some selection for *Carex atherodes*, however it was also very abundant. In winter there was no evidence of selection for *C. atherodes*.

Even though bison did not actively search for specific species or patches of forage, their feeding and movement patterns increased their likelihood of foraging in areas with better than average quality of forage. During winter, when evidence of bison feeding activity remained evident in the snow for some time, it was possible to reconstruct feeding activity and patterns. It appears as if bison perception of forage quality was directly related to the recent experience of forage quality. As bison moved from one feeding crater to another, if they perceived the quality was better than in recent craters, the following craters would increase in size and be closer together with a more sinuous path between craters. If the perception of quality was lower than recent craters, the size of the craters would decrease and the distance between craters would increase while the path taken between craters would be more linear or less sinuous. With this behaviour bison tend to utilize the better than average forage patches within a meadow. This pattern of foraging does not guarantee the specific quality of forage utilized but likely does improve the relative average quality of forage consumed by individual bison.

Fortin also recorded the response of bison to human disturbance 534 encounters.(4) The pooled data showed that when bison were first encountered by people using various means of transport, the bison approached 3% of the time, stood their ground 46%, and fled 51% of the of the time. Bison were more likely to flee from motorized vehicles and their probability of flight increased as distances at first encounter decreased. A disturbed herd of bison moved at least 30% further in a day than those which were not disturbed. Disturbance by wolves appeared uncommon at this point.

Local knowledge of the habitat, landscape, trails and behaviour of bison in specific situations will need to be incorporated with the scientific information from local research and the literature to prepare an effective and practical management strategy.

## **6. STRATEGY DEVELOPMENT PROCESS**

The Scoping Document for the Strategy and the Terms of Reference for the operation of the Strategy Development Team have been completed. Next steps include a number of meetings in which specific positive and negative issues in relation to the management of the bison population will be discussed and possible management approaches refined. This will continue until all the issues have been raised and preferred approaches to taking advantage of or managing the situations have been identified. Using the approved vision and principles outlined in the Scoping Document, the best approaches will be identified using a consensus approach. Once individual approaches to issues have been identified, the sum of the approaches will be evaluated in relation to each other to ensure they are at least compatible and hopefully complimentary. In this way it is hoped that a comprehensive and effective Management Strategy can be developed.

Consultation and progress update meetings will be scheduled with the West Side Bison Management Group to keep them informed of progress and direction of the work. Once a draft Plains Bison Management Strategy has been developed, a series of meetings will be scheduled to consult with the public on the proposed approach. Public comments will be considered and a final Strategy developed. Approval of the local rural municipalities, Saskatchewan Environment and Parks Canada will be sought so that implementation of the strategy can begin. Once implementation has been initiated it must be recognized that both the precautionary principle and adaptive management principle should be ingrained in the approach.

This is the first time such an endeavour has been attempted with plains bison in, or adjacent to, areas with significant agricultural activities. It is hoped that the lessons learned while developing and implementing the Plains Bison Management Strategy will be useful to other managers who may attempt similar ventures with plains bison or other species that generally are not expected to coexist well within, or adjacent to, human development.

## **REFERENCES**

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