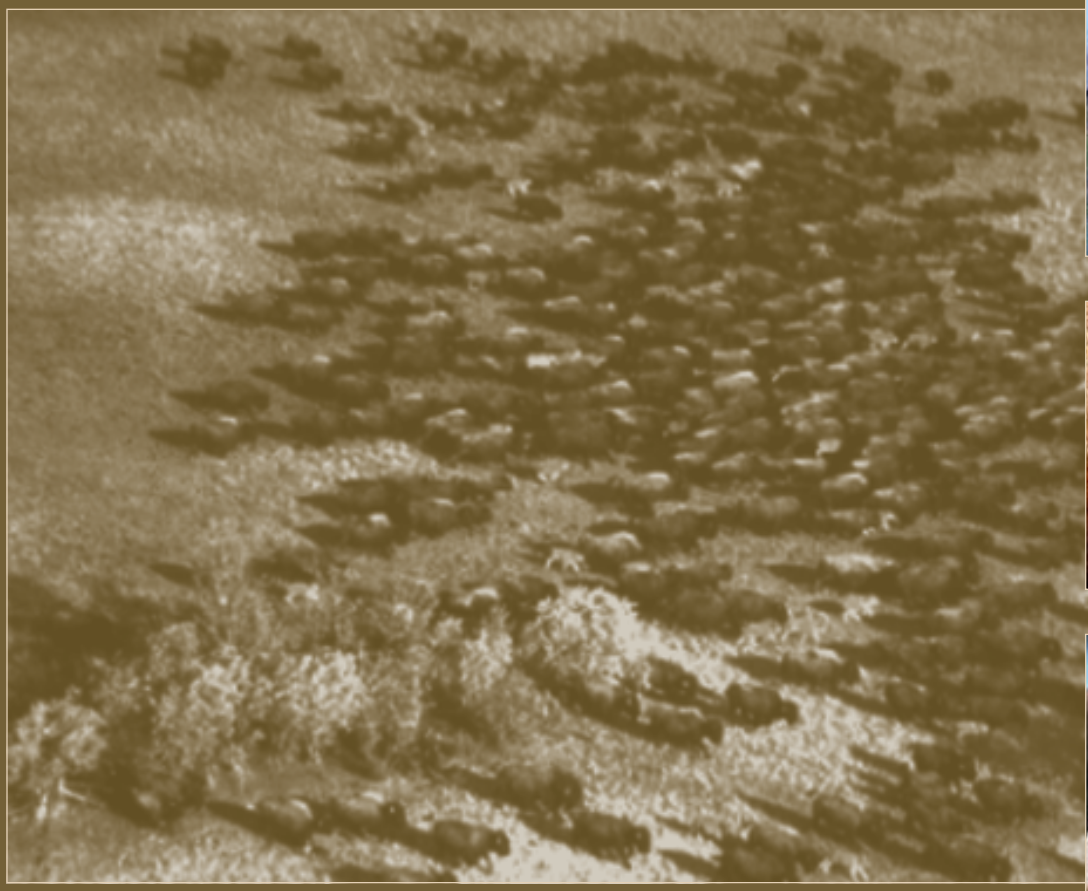
DRAFT
WOOD BISON MANAGEMENT STRATEGY
FOR THE NORTHWEST TERRITORIES



2009-2019

NWT Species at Risk

Northwest Territories Environment and Natural Resources

WE WANT TO HEAR FROM YOU!

The Department of Environment and Natural Resources has prepared a draft management strategy for wood bison in the Northwest Territories (NWT). The purpose of the strategy is to provide long-term vision and guidance for the recovery of wood bison in the NWT. The draft management strategy outlines the general goals and direction for wood bison management.

We want to hear your opinions. In particular, we want to know what you think about the following questions:

- Are the goals appropriate for the management of wood bison in the NWT?
- Have all the challenges been identified?
- Which key strategies are the highest priorities to manage wood bison?
- Which key strategies are most important to address immediately?

By **March 13, 2009**, please contact your local Environment and Natural Resources office, or send your comments to:

Ms. Susan Fleck
Director, Wildlife Division
Department of Environment and Natural Resources
Government of the Northwest Territories
P.O. Box 1320
Yellowknife, NT X1A 2L9

Tel: (867) 920-8064
Fax: (867) 873-0293
E-mail: sara@gov.nt.ca

Visit: www.nwtwildlife.com

1. VISION

The *Wood Bison Management Strategy for the Northwest Territories* outlines general goals and direction for wood bison management in the Northwest Territories (NWT). The purpose of the strategy is to provide long-term vision and guidance for the recovery of wood bison and the development of individual management plans for the NWT's Slave River Lowland, Nahanni and Mackenzie wood bison populations. The management plans will contain technical objectives and actions to achieve the goals of the *NWT Wood Bison Management Strategy.*

The goals and actions identified in this management strategy support the vision, goals and strategic initiatives of the Legislative Assembly. Specifically, the strategy supports two of the 16th Legislative Assembly's goals:

- *"an environment that will sustain present and future generations"* with the priority to *"coordinate our efforts to ensure development is sustainable for our land and wildlife,"* and
- *"a diversified economy that provides all communities and regions with opportunities and choices"* with the priority to *"support the development of sustainable local economies through small businesses and community-based sectors such as tourism, agriculture, arts and crafts, and the traditional economy."*

The strategy also implements activities identified under the Government of the Northwest Territories (GNWT) *Business Plan* and the Department of Environment and Natural Resources (ENR) *Framework for Action.*

2. GOALS

Our goals for wood bison recognize that bison, like other wildlife, have ecological, cultural and spiritual values along with consumptive uses. The goals are:

1. To recover free ranging, genetically diverse, healthy[1] wood bison throughout their historic range in the NWT that can sustain on-going harvests for the benefit of all NWT residents.
2. To contribute to the restoration of free-ranging, healthy wood bison throughout their historic range as envisioned in the national draft *Recovery Strategy for the Wood Bison in Canada.*

Implications of these goals are:

1. Recovery of bison within the NWT will result in expansion of healthy wood bison populations into new areas where there is suitable habitat.
2. Benefits to NWT residents will be greatest when bison populations increase to a point where they can sustain annual harvests with a low level of regulation, such as currently applied to moose in the NWT.
3. Active surveillance for bovine tuberculosis and brucellosis in bison populations, and containment of these diseases, need to continue as long as there are infected populations and a desire to protect non-infected animals from infection.
4. The NWT will work toward removing bovine tuberculosis and bovine brucellosis from bison in and around Wood Buffalo National Park (WBNP) in cooperation with Canada, First Nations, other agencies and communities.
5. The Bison Control Area program needs to continue until bison in and around WBNP are no longer infected with tuberculosis or brucellosis.
6. Actions will be needed to prevent further loss of genetic diversity within, and among, populations, and to enhance genetic diversity in wood bison in the NWT. Continued survival of populations will be more likely with broader genetic diversity within, and among, populations.
7. Herd specific management plans for NWT wood bison will contribute to the recovery of free-ranging wood bison in Canada by honouring the goals, principles and objectives of the national draft *Recovery Strategy for the Wood Bison in Canada*.

[1] Healthy means that bison are free of bovine tuberculosis, brucellosis and other significant diseases from domestic animals.

3. PRINCIPLES

In addition to the principles identified in the national draft *Recovery Strategy for the Wood Bison in Canada*, the NWT recognizes that:

1. Recovery and restoration of wood bison in the NWT cannot be achieved without the cooperation and support of Aboriginal organizations, the Tłı̨chǫ Government and NWT communities.
2. Communities will lead in identifying specific management objectives for bison on their traditional lands.

Principles of the draft *Recovery Strategy for the Wood Bison in Canada*:

- Manage at the landscape level.
- Use all sources of knowledge.
- Employ the Precautionary Principle.
- Use adaptive management approaches.
- Take long-term recovery approaches.
- All responsible jurisdictions will contribute.
- Establish genetically diverse populations.
- Community involvement is imperative.
- Wildlife Management Boards and Aboriginal governments will be respected.

4. BACKGROUND

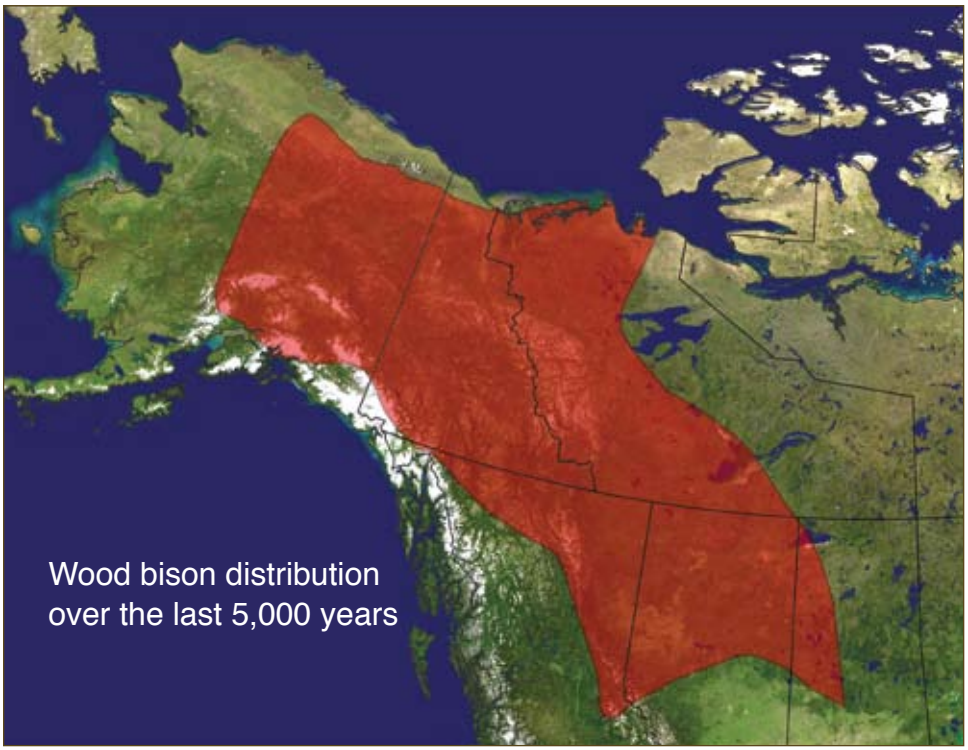
Bison are important to people for many reasons. Before their populations were decimated, both plains and wood bison were a critical resource to Aboriginal peoples. People today still harvest bison where they can. Many North American Aboriginal peoples have a strong cultural and spiritual connection to bison. However, where bison have been missing from the ecosystem for a long time, communities may no longer see bison as part of their heritage. Recovering bison will provide opportunities for cultural and spiritual reconnection, for viewing and harvests as well as for aesthetic and economic benefits. It will also re-establish the ecological role bison play on the landscape.

Wood bison (*Bison bison athabascae*) are the largest land mammals in North America. Adult males weigh over 800 kg and females over 500 kg. They graze mainly on grasses and sedges found in meadows, wetlands and areas that have recently been disturbed. They move with the seasons to graze where they can best obtain protein.

Since they may form large herds, bison can have a major impact on ecological communities. They impact plant communities directly through grazing and other physical activities such as creating wallows and horning trees. They are a source of food for predators and scavengers and may affect other prey species indirectly if they attract more predators.

Historically, wood bison ranged over most of the boreal region of North America west of the Precambrian Shield. The southern edge of their distribution bordered the northern edge of plains bison range. Their range covered most of the western NWT, nearly all of northern Alberta (AB), north-eastern British Columbia (BC), a small part of north-western Saskatchewan and most of Yukon and Alaska (Fig. 1). Wood bison disappeared from much of this range by the end of the 19th century. At that time, they remained only in the region between Great Slave Lake and the Peace-Athabasca delta. The decline of wood bison paralleled the demise of plains bison to the south between 1840 and 1900. There may have been over 150,000 wood bison across their range in 1800, but it is estimated that only 250 remained by 1891. There are currently about 2,700 bison in the NWT.

Figure 1. Approximate historic distribution of wood bison.



Wood bison were initially assessed as *endangered* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1978. COSEWIC assessed wood bison again in 1988, when the species was down-listed to *threatened* and, in 2000, when the *threatened* status was confirmed. In 2004, wood bison were listed as *threatened* on Schedule I of the federal *Species at Risk Act*.

Environment Canada, in cooperation with responsible jurisdictions, is developing a *Recovery Strategy for the Wood Bison in Canada* as required by the federal *Species at Risk Act*. The goal of the draft national recovery strategy is to have "*multiple large populations of wood bison moving freely across extensive landscapes in all formerly occupied ecozones within original range, functioning as an ecologically interactive species connected to human cultures*." The goals of the *NWT Wood Bison Management Strategy* are consistent with the draft national goal and bison management in the NWT will complement the national recovery strategy.

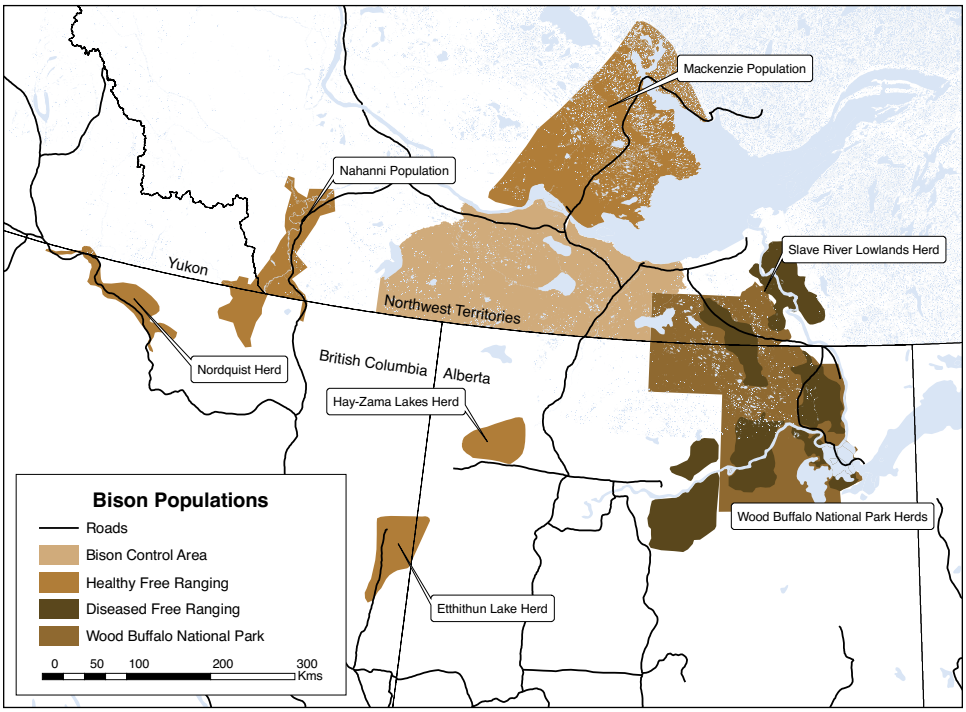
The objectives of the draft *Recovery Strategy for the Wood Bison in Canada* are:

1. Establish and maintain at least five genetically diverse populations of more than 1,000 wood bison.
2. Establish and maintain smaller populations, where possible, in addition to the five above.
3. At least two populations in each ecoregion that are free-ranging, genetically diverse, integrated into the ecosystem, capable of a population growth rate of at least 15 percent per year and have natural gene flow between populations.
4. Eliminate bovine tuberculosis and bovine brucellosis from all wood bison.
5. Maintain genetic diversity among and between populations.
6. Maintain the Elk Island National Park captive, disease-free, wood bison recovery herd.
7. Manage other threats, e.g. the domestic animal-bison interface, accidental mortality (such as vehicle collisions) and genetic integrity (prevent incursion of plains bison genes).
8. Ensure wood bison recovery addresses social, cultural, ecological and economic issues of Aboriginal peoples and local communities.

5. POPULATIONS IN THE NORTHWEST TERRITORIES

There are seven free-ranging populations of wood bison within the historic wood bison range in Canada; three occur in the NWT (Fig. 2).

Figure 2. Wood bison populations in north-western Canada.



In the NWT, wood bison are found in three areas:

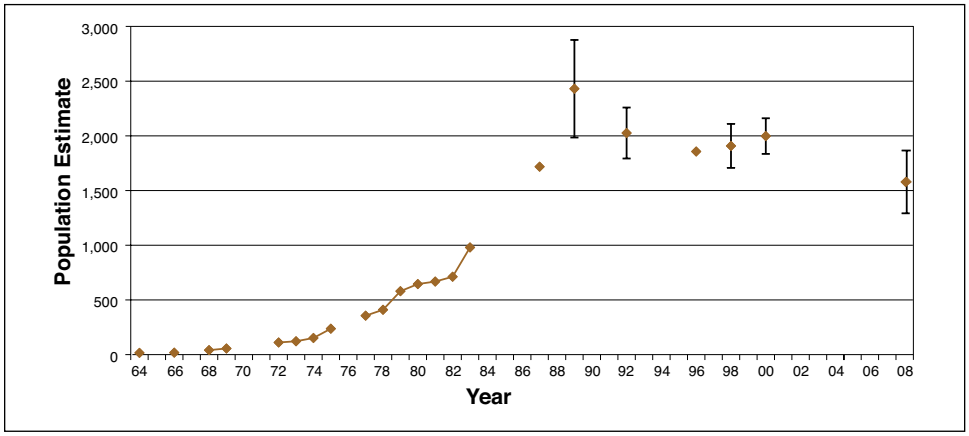
Slave River Lowlands

Bison in the Slave River Lowlands (SRL) range on both sides of the Slave River, including into Wood Buffalo National Park (WBNP). Their range is bounded by the Precambrian Shield on the east. Since bison move between SRL and WBNP, SRL bison are considered to be part of the greater WBNP wood bison population. Wood bison in the park are managed by Parks Canada. Animals outside the park in the NWT are managed by ENR. The SRL population is infected with bovine tuberculosis and brucellosis. There were an estimated 600 bison in the SRL in 2002, 518 in 2004 and 500 animals in 2006. The Slave River Lowlands population seems to be declining slowly.

Mackenzie

In 1963, 77 wood bison were captured from the Needle Lake area of WBNP to establish a captive breeding herd. After testing for disease, 19 disease-free animals were held in corrals near Fort Smith. In June of that year, an anthrax outbreak occurred in free-ranging bison to the north of the holding facility, so the captive herd was transferred to an area within historic wood bison range west of Great Slave Lake. In August 1963, 18 bison were transported from the holding facility and released approximately 25 km north of Fort Providence, but two died soon after. The 16 survivors were the founders of the Mackenzie bison population, which is currently the only NWT population to meet the draft national recovery strategy's objective of a healthy population of more than 1,000 individuals. The Mackenzie population declined to about 1,600 bison in March 2008, down approximately 20 percent from estimates obtained in 1998 and 2000 (Fig. 3).

Figure 3. Mackenzie wood bison population size estimates, 1964 to 2008. Bars are 95% Confidence Limits.



Nahanni

The Nahanni population was established in 1980 when 28 wood bison from Elk Island National Park (EINP) were released near Nahanni Butte. The founding herd split up. Some bison moved as far south as Fort Nelson, BC, and others died. One year later, only 14 bison remained in the Nahanni Butte area. By 1989, numbers had increased to about 40 bison, when 12 more wood bison from EINP were released near Nahanni Butte. In 1998, the population was further increased by the release of 59 more wood bison from EINP. In March 2004, the Nahanni population was estimated at about 400 bison, not including calves. Annual age and sex composition studies suggest the population is slowly increasing.

6. CHALLENGES

6.1 Addressing Disease

Three diseases currently challenge wood bison management in Canada: bovine tuberculosis (*Mycobacterium bovis)*, bovine brucellosis (*Brucella abortis*) and anthrax (*Bacillus anthracis*). Tuberculosis, brucellosis and anthrax are all cattle diseases that can infect wildlife, other livestock and humans.

6.1.1 Bovine Tuberculosis and Bovine Brucellosis

Bovine tuberculosis (TB) and bovine brucellosis are common in the greater WBNP bison population, including the SRL. The Mackenzie and Nahanni bison populations are believed to be free of those diseases.

Tuberculosis and brucellosis are chronic infections that reduce reproduction and survival in bison. Although both diseases can kill bison, the more important impact may be the effects of these diseases on reproduction, energy balance and immune function which result in reduced population growth.

Bison in WBNP were infected with TB when over 6,600 plains bison were moved from Wainwright, AB, to WBNP in the 1920s. The origin of brucellosis infection in WBNP is not clear, but the most likely source was the animals from Wainwright. It is believed bovine tuberculosis and brucellosis in the Wainwright bison originally came from infected cattle. Both tuberculosis and brucellosis can be spread among wildlife populations, back to domestic livestock and to humans.

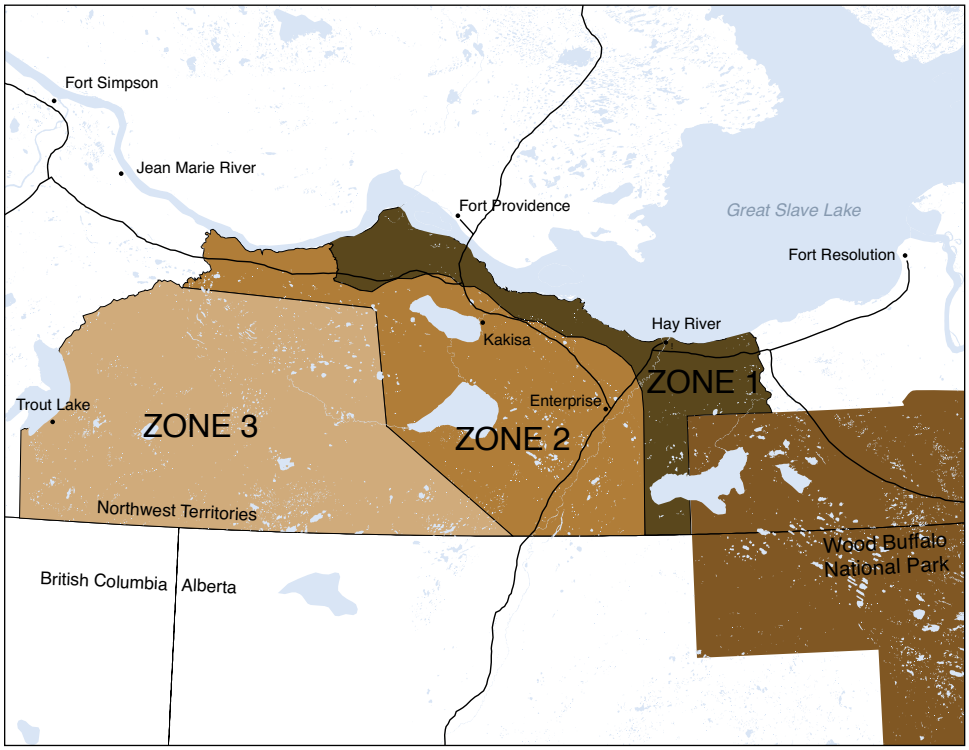
The most recent estimate of infection rates in the greater WBNP wood bison population found about 50 percent of the animals were infected with bovine tuberculosis and 30 percent with bovine brucellosis. While these infections reduce productivity and survival of bison, other factors such as feeding conditions, weather and predation also impact populations. Tuberculosis and brucellosis contributed to the long-term decline of the greater WBNP wood bison population from 1970 to 2000. However, these diseases are unlikely to drive this population into extinction unless there are other contributing factors such as predation, hunting, range conditions and weather. In fact, the WBNP bison population has rebounded since 2000.

The challenge to bison management is to minimize the risk of tuberculosis and brucellosis spreading from the WBNP area to infect healthy wood bison populations in NWT and AB.

The Bison Control Area (BCA, Fig. 4) was established in 1987 as a joint program of ENR and Parks Canada to reduce risk of disease spreading to the Mackenzie population. The BCA is surveyed from the air every year between late November and March to detect bison in the area. Any NWT resident can shoot bison in the BCA. Animals removed from the BCA must be reported to ENR and are tested for brucellosis and tuberculosis.

To date, 14 bison have been removed from the BCA. The current annual cost to maintain the BCA is $100,000. The BCA will remain in place until disease in WBNP and SRL is eradicated. To prevent contact between infected bison near WBNP and the growing Hay-Zama bison population (Fig. 2), AB has started to hunt Hay-Zama bison to reduce numbers and limit range expansion east toward WBNP.

Figure 4. The Bison Control Area is divided into three zones. Surveillance is most frequent in zone 1.



The cattle industry in western Canada remains concerned over the potential for contact between diseased wild bison and cattle. Cases of tuberculosis or brucellosis for any captive animals must be reported to the Canadian Food Inspection Agency (CFIA). If a case is confirmed, the captive animals exposed to the diseases are slaughtered. This policy has resulted in the eradication of these diseases from cattle. The Canadian cattle industry is now recognized as disease-free. Any outbreaks of these diseases could cost Canada's multi-million dollar cattle industry the ability to export animals and animal products, which would lead to an economic crisis similar to the one following a confirmed case of bovine spongiform encephalopathy (BSE) in 2003. Eradicating tuberculosis and brucellosis from wild bison is a major challenge that will require concerted effort by all partners over several years.

6.1.2 Anthrax

Anthrax is a serious disease that affects bison, humans and other species. Anthrax spores can stay alive in the environment for many years. Infections occur when bison (or other species) inhale or eat large numbers of anthrax spores. The anthrax bacterium multiplies rapidly in the blood, producing a poison that quickly kills the animal. Anthrax spores are released back into the environment when scavengers open the carcass and spread the infected tissues. Severe outbreaks can kill many animals in a short time.

Anthrax outbreaks in wood bison have occurred in the SRL, Mackenzie Bison Sanctuary and WBNP. No outbreaks have been reported in the Nahanni population. The most recent outbreaks were in the SRL in 2006 and WBNP in 2007.

The challenge is to minimize the risk of tuberculosis and brucellosis spreading from the WBNP area to infect healthy wood bison populations in NWT and Alberta.

Additional challenges posed by anthrax are monitoring outbreaks, finding all infected carcasses, reducing the number or severity of future outbreaks and preventing transmission to humans.

6.1.3 Other Diseases

Preventing the spread of diseases carried by domestic animals to wild bison is not currently an issue in the NWT. It is a definite concern in AB and BC. Managing potential contact between domestic animals and wood bison will become important to wood bison managers as agriculture and wood bison ranges expand.

The challenges will be to monitor and assess the cumulative effects of habitat changes to maintain adequate habitat for wood bison and maintain habitat productivity.

6.2 Habitat Management

Currently, there is sufficient habitat in the NWT to support expanding bison populations. Potential causes of bison habitat loss or degradation in the NWT are oil and gas development, mining, the spread of shrubs and trees into prairie habitat, forest management practices and agriculture.

All these factors have caused major losses of historic bison habitat in AB and BC. Land use activities can also lead to further developments such as access roads and other linear features. Bison, especially males, travel along these roads and linear features. This can cause increased human/bison conflict, damage to equipment or pipelines, increased bison deaths on roads and contact with agricultural operations. Roads and other linear features can also result in bison moving into areas where they would not otherwise exist.

Habitat quality and quantity are also affected by several factors, including water table levels and forest fire management practices. Water in the Mackenzie Bison Sanctuary is currently affecting the availability of grazing areas for bison. Fire is a natural component of the boreal forest ecosystem and an important tool to reduce invasion of shrubs into prairies and maintain high quality forage. The challenge is to work with communities to maintain fire in the ecosystem.

Critical habitat is a specific legal term defined by the federal *Species at Risk Act* as the habitat necessary for the survival or recovery of a wildlife species listed as *threatened* or *endangered*. The federal *Species at Risk Act* requires, to the extent possible, the identification of critical habitat in a recovery strategy or action plan for listed species or a schedule of studies to do so. More information and research is needed to identify suitable and critical wood bison habitat in the NWT.

6.3 Managing Bison Harvests

The devastating declines in wood and plains bison populations that resulted in their near extinction in the late 1800s were caused by hunting rather than habitat loss. Today, harvesting is part of recovery management for wood bison.

Under the federal *Species at Risk Act*, a species listed as *threatened* may not be killed on federal Crown land under the authority of the federal Minister of the Environment, such as National Parks or National Wildlife Areas, except where permitted under a national recovery strategy. For this reason, bison hunting is not allowed in WBNP. In the rest of the NWT, bison hunting is allowed under a quota system and regulations for harvesting differ between areas. The NWT *Big Game Hunting Regulations* consider bison in the SRL to be hybrids, which General Hunting Licence (GHL) holders may hunt without limit or closed season.

Harvesting is used as a recovery management tool in other jurisdictions. In the Yukon, the bison population has exceeded its target size. In AB, there is concern the disease-free Hay-Zama population may come into contact with infected bison from WBNP.

An ongoing challenge will be to determine harvest quotas for each population, allocate harvests and track mortality, while respecting Aboriginal rights.

The challenge is to re-establish a connection between people and bison in all areas, while maximizing the social, economic and cultural benefits for everyone involved with the recovery of wood bison in the NWT.

6.4 Maximizing Social, Economic and Cultural Benefits

Continued existence of wildlife depends on acceptance by local people. For bison, social and cultural acceptance by local people and Aboriginal communities will be very important for recovery of the species because local residents use and manage landscapes where wood bison will need to be reintroduced to achieve recovery.

All communities have a strong interest in bison management within and surrounding WBNP, but not all communities have a recent history of cultural involvement.

Wildlife conservation projects will be more successful if they create social and economic benefits to people living in the local area. Benefits from wildlife can take various forms, but part of the social, cultural and, perhaps, spiritual connection to bison will be based on opportunities to hunt the animals. There may also be expanded economic benefits through opportunities for tourism and outfitting. A wood bison hunt is valued at about $5,000 and an expanding wood bison population offers opportunities for increased outfitted hunts.

6.5 Reducing Bison – Human Conflicts

Bison, like other wildlife, can come into conflict with humans. In the NWT, conflicts generally occur when bison enter communities or occupy highway corridors. In other areas, bison also create conflicts with agriculture.

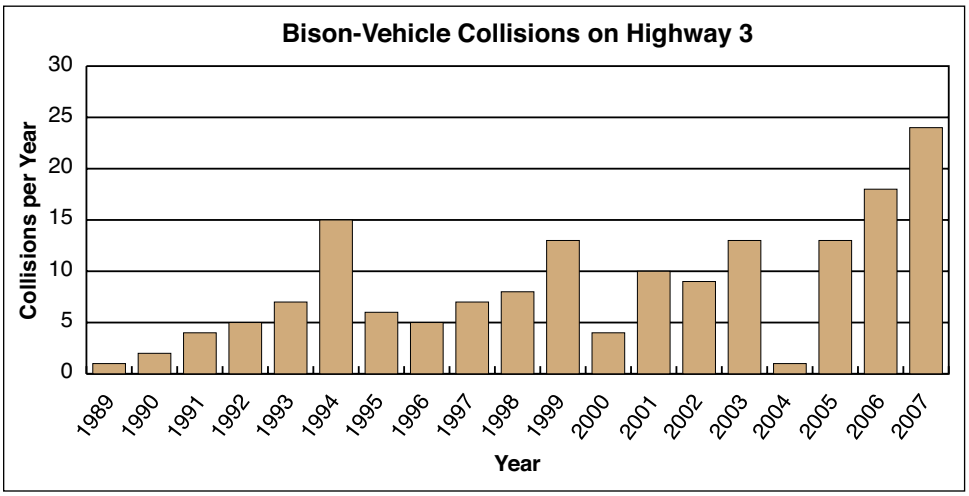
Bison have been coming into Edzo-Behchoko, Nahanni Butte, Fort Liard and Fort Providence for years. Within communities, these animals can damage property, injure pets and be a hazard to human safety. There are programs to herd bison out of Fort Providence and Fort Liard. Herding can move bison out of these communities, but it only has a short-term effect. Bison are not avoiding these communities. While some actions like community planning are under way, more information is needed to develop effective measures to keep bison out of communities.

Collisions between bison and vehicles occur on all highways in the range of wood bison in the NWT. The probability of a human fatality is increasing, especially along Highway 3, as the number of collisions has increased in recent years (Fig. 5). This increase is likely because of the increased speed and volume of traffic, the movement and expansion of Mackenzie bison due to flooding in the Mackenzie Bison Sanctuary, and the straightening, widening and better maintenance of the highway.

The Department of Transportation is also concerned about the rising number of bison and vehicle collisions along Highway 5 to Fort Smith.

Bison most frequently hit by vehicles are adult females, then calves, followed by adult males. Collisions are more frequent from August to December. Limited data suggest most occur during low light conditions at night, dusk and dawn.

Figure 5. Bison-vehicle collisions have increased in recent years.



Collisions between bison and vehicles may increase further once the Dehcho bridge is completed if traffic on Highway 3 increases. Cattle grate aprons have been included in the bridge design to help prevent bison from getting onto the bridge.

The challenge is for all people living and working within the range of wood bison to work together to reduce human-bison conflicts.

The challenge for bison management is to understand the impact bison populations have on other species, particularly woodland caribou and moose.

The challenge is to increase genetic diversity in the Mackenzie and Nahanni populations, and any new populations.

6.6 Impacts of Bison on Ecosystems

Wood bison are the largest land mammals in North America and, especially when re-introduced into an area, have a noticeable impact on local ecosystems.

Bison affect habitats directly by grazing, trampling, defecating, urinating, making trails, wallowing, horning and rubbing on trees and other objects. There is little overlap in the diets of bison, moose and caribou, so it unlikely there will be direct competition between these species. However, wolves and bears prey on bison. Increasing bison populations can result in increased numbers of predators, which in turn may affect boreal woodland caribou or moose populations.

6.7 Enhancing Genetic Diversity

WBNP and the SRL sub-population have the most genetically diverse wood bison. The Mackenzie population was established from 16 individuals taken from WBNP. The EINP captive herd is descended from 11 founders from WBNP. As a result of the small number of animals used to establish these herds, the Mackenzie and EINP populations have lower levels of genetic diversity than WBNP.

The Nahanni, and all other wood bison herds except the Mackenzie population, were established by taking animals from EINP's captive herd. They may have even lower genetic diversity than EINP.

Low levels of genetic diversity in a population can result in lower levels of survival and reproductive success, and a reduced ability to adapt to rapid changes such as climate change.

6.8 Preventing Hybridization

Plains bison were introduced into wood bison range in the 1920s and began breeding with wood bison, resulting in hybrid bison. Whether wood bison continue to exist as a separate sub-species is a topic of some controversy. However, there are enough physical and genetic differences between wood and plains bison to recognize all bison in the NWT as distinct.

The mixing of wood and plains bison is a threat to wood bison conservation because it results in the loss of sub-species that have adapted to different habitats and environments. The threat of hybridization of wood bison comes from two sources: domestic bison, which are plains bison or bison of unknown origin, and free-ranging, feral plains bison within original wood bison range, such as at Pink Mountain, BC.

The threat of hybridization is currently low in the NWT.

The challenge is to prevent domestic bison and plains bison from coming into wood bison range in the NWT.

6.9 Agriculture

Agriculture presents a number of challenges to wood bison recovery. Changing natural ecosystems into farmland reduces wildlife habitat. Crop or property damage caused by bison reduces local acceptance of wildlife and problem animals may be killed. Domestic animals can spread diseases, such as TB and brucellosis, to bison. Agriculture is currently not a major activity in the NWT.

The challenge will be to manage agriculture and bison recovery actions together so they do not have negative impacts on each other.

7. KEY STRATEGIES

The *NWT Wood Bison Management Strategy* has four major components to achieve its goals and address challenges:

1. Work with communities and Aboriginal governments to develop and implement separate management plans for Mackenzie, Nahanni and Slave River Lowland bison populations.
2. Promote social, economic and cultural benefits for NWT residents.
3. Maintain healthy and productive wood bison populations.
4. Support wood bison recovery throughout its historic range.

Key strategies and immediate actions are identified under each component. The actions needed to implement and achieve the goals of this strategy are outlined in Appendix B. The immediate actions are to take place by April 2009.

7.1 Work with communities and Aboriginal governments to develop management plans for each bison population.

The challenges facing wood bison recovery are different for each population in the NWT. To make sure recovery actions are appropriate and acceptable to community members, communities should take the lead in identifying management priorities for wood bison populations in their area. This can be achieved by working with communities and Aboriginal governments to prepare individual management plans for each of the three wood bison populations. Development of these plans will also involve identifying ways the NWT can provide effective legal protection for this species as required under the federal *Species at Risk Act*. It will take approximately two years to complete these plans and implementation can begin. Collecting the information needed to manage each wood bison population will continue.

Key Strategies:

1. Develop a ten-year management plan for each of the three wood bison populations: Mackenzie, Nahanni and Slave River Lowlands.
2. Implement management plans for each population.

Immediate Actions

Hold workshops in regions by April 2009 to develop a process to prepare management plans.

Immediate Actions

- *Increase wood bison tags available for the Tłı̨chǫ region.*
- *Increase wood bison tags available for the Nahanni population.*
- *Allow wood bison hunting in the area along Highway 3.*
- *Compile information on deterring wildlife from highways in other jurisdictions.*
- *Increase efforts to keep bison out of communities, including increasing availability of public education materials.*

7.2 Promote social, economic, and cultural benefits for NWT residents.

To be successful, recovery and conservation actions must be supported by local community residents. The likelihood of community support is far greater if species conservation leads to social, economic or cultural benefits to the community.

Wood bison already provide a number of community benefits. Subsistence use of wood bison helps reduce dependence on store bought foods and encourages a healthy diet. Expanding opportunities to harvest bison from this population could help offset the reduction in available meat from decreasing barren-ground caribou populations.

Bison can also contribute to economic diversification and self-sufficiency. The Tłı̨chǫ Government has requested additional tags under the quota to expand the economic benefits available from outfitted bison hunts. Wood bison are also an important tourist attraction. There may also be opportunities to establish a small commercial harvest for local markets. Opportunities to increase the potential economic benefits should be explored.

However, bison are also causing economic losses and jeopardizing human safety by coming into conflict with people in communities and on highways. These issues need to be addressed if community residents are to support bison recovery actions.

Key Strategies:

3. Expand opportunities to harvest wood bison.
4. Expand potential economic benefits.
5. Work with communities and other agencies to reduce bison/human conflicts.

7.3 Maintain healthy and productive wood bison populations.

Anthrax, bovine tuberculosis and brucellosis present serious health risks to humans, other wildlife and livestock. These diseases directly affect the survival and productivity of wood bison populations and slow down recovery of populations. Tackling these diseases will require commitments from communities and other agencies.

Public awareness of anthrax outbreaks and how to minimize infection from tuberculosis and brucellosis must continue. Eliminating these diseases from our northern landscape is a long-term goal of this strategy. Preventing habitat loss or degradation is also a critical part of maintaining productive bison populations.

Key Strategies:

6. Monitor disease levels in all populations.
7. Engage partners to manage diseases.
8. Enhance habitat productivity.

Immediate Actions

Expand disease sampling for Nahanni and Mackenzie populations.

7.4 Support wood bison recovery throughout its historic range.

Currently there are three wood bison populations in the NWT, but their historic range covers significantly more area. Continued recovery of wood bison throughout their historic range will contribute to getting wood bison taken off the federal species at risk list. This will be a great legacy for the government and people of the NWT. However, expanding wood bison throughout their historic range will require support and cooperation of Aboriginal organizations, the Tłı̨chǫ Government and NWT communities.

Key Strategies:

9. Consult with communities, wildlife management boards and Aboriginal organizations regarding recovering wood bison throughout their remaining historic range in the NWT.

APPENDIX A – FINANCIAL SUMMARY

	2009-2010	2010-2011	2011-2012	2012-2013
Work with communities to develop management plans				
Strategy 1	$ 125,000	$ 125,000	$ 0	$ 0
Strategy 2	To be determined in management plans			
Promote Social and Economic Benefits				
Strategy 3	No major costs			
Strategy 4	No major costs			
Strategy 5	$ 70,000	$ 7,0000	$ 70,000	$ 70,000
Maintain Healthy Wood Bison Populations				
Strategy 6	$ 60,000	$ 60,000	$ 60,000	$ 35,000
Strategy 7	$ 250,000	$ 250,000	$ 250,000	$ 250,000
Strategy 8	$ 5,000	$ 10,000	$ 0	$ 0
Support National Wood Bison Recovery				
Strategy 9	$ 50,000	$ 0	$ 5,000	$ 0
Totals	**$ 560,000**	**$ 515,000**	**$ 385,000**	**$ 355,000**
Existing Resources	$ 95,000	$ 95,000	$ 70,000	$ 70,000
Partnership Resources	$ 175,000	$ 150,000	$ 150,000	$ 150,000
New Resources	**$ 290,000**	**$ 270,000**	**$ 165,000**	**$ 135,000**

APPENDIX B – DETAILED STRATEGIES

1. Develop a ten-year management plan for each of the three wood bison populations: Mackenzie, Nahanni and Slave River Lowlands.

- Consult with communities and other stakeholders to identify conservation objectives, threats, challenges and management actions to develop a ten-year management plan for each of the three wood bison populations: Mackenzie, Nahanni and Slave River Lowlands.
- Establish committees and hold workshops with communities and stakeholders to develop management plans ($60,000, Timeline to 2011).
- Collect or update information required for management.
  - Update Nahanni (2010-2011) and SRL (2009-2010) population estimates ($40,000).
  - Conduct annual composition surveys for all populations ($25,000).
  - Identify methods to monitor moose, caribou and predator populations on bison range (costs to be determined).
- Consult on options to enhance genetic diversity of introduced NWT wood bison populations without spreading tuberculosis or brucellosis (no major cost).

	2009-2010	2010-2011
Hold consultations	$ 60,000 (new)	$ 60,000 (new)
Population estimates	$ 40,000 (new)	$ 40,000 (new)
Composition surveys	$ 25,000 (ongoing)	$ 25,000 (ongoing)
Total	**$ 125,000**	**$ 125,000**

Timeline: Winter 2011

Payback and Results

- Ten-year management plans developed that address specific objectives and challenges for each population.
- Communities and Aboriginal governments will provide direction on management actions on traditional lands.
- Public and stakeholders will be aware of their role in conserving bison.

2. Implement management plans for each of the three populations.

	2011-2012 and ongoing
Mackenzie	Investment to be identified in management plans
Nahanni	
Slave River Lowlands	
Total	

Timeline: Begin Spring 2011

Payback and Results

- Social, cultural, spiritual and economic connections between people and bison will be re-established.
- Actions will be taken to help the recovery of wood bison and specific challenges to recovery will be addressed.

3. Expand opportunities to harvest wood bison.

- Identify targets for population size.
- Determine sustainable harvest levels.
- Create new bison management zones.
- Revise harvest quotas and hunting seasons.
- Track all bison mortality (e.g. hunting, disease sampling, traffic). (No major costs.)

Timeline: Ongoing

Payback and Results

- Bison harvest is sustainable for present and future generations.
- Community residents will have greater access to a source of meat.

4. Expand potential economic benefits that could result from increased bison populations.

- Enable outfitting opportunities for communities to maximize benefits to NWT residents (no major cost).
- Promote viewing opportunities for tourists (cost to be determined with Industry, Tourism and Investment).
- Consider small commercial harvest for local, NWT value-added markets (no major cost).
- Investigate other economic opportunities (Industry, Tourism and Investment – no major cost).
- Review concept of establishing domestic bison herds (no major cost).

Timeline: Winter 2011

Payback and Results

- Local economies will be diversified.
- Attractions for tourists will be increased.

5. Work with communities and other agencies to reduce bison-human conflicts.

- Continue immediate actions to herd bison out of communities and remove problem animals ($25,000).
- Work with communities and MACA to implement actions to reduce the number and frequency of bison within communities (cost to be determined with MACA).
- Work with communities and DOT to reduce conflicts with bison on highways, airports and bridges ($10,000).
- Work with other agencies and develop programs to modify drivers' behaviour to reduce frequency of bison-vehicle collisions on NWT highways ($15,000).
- Include bison habitat management objectives in land use plans (no major costs).
- Identify measures to reduce bison conflicts in agricultural areas as bison ranges expand (no major costs).
- Develop public education material to reduce conflicts between bison and people in communities ($20,000).

	2009-2010	2010-2011	2011-2012	2012-2013 and ongoing
Continue immediate actions	$ 35,000 (ongoing)	$ 35,000 (ongoing)	$ 35,000 (ongoing)	$ 35,000 (ongoing)
Public education	$ 35,000 (new)	$ 35,000 (new)	$ 35,000 (new)	$ 35,000 (new)
Total	**$ 70,000**	**$ 70,000**	**$ 70,000**	**$ 70,000**

Timeline: Ongoing

Payback and Results

- Public safety will be enhanced.
- Cost to repair damage caused by bison will be reduced.
- Reduced cost to government to address conflicts.

6. Monitor disease levels in all populations.

- For bovine tuberculosis and brucellosis:
  - Continue testing for disease in Mackenzie and Nahanni populations. Focus sampling in areas of highest risk ($25,000 – three years).
  - Continue disease sampling from all harvested bison from the Mackenzie and Nahanni populations ($5,000).
- For anthrax:
  - Continue anthrax surveillance program on Mackenzie and SRL ($25,000).
  - If dead bison are found, implement the Anthrax Emergency Response Plan (new funding is requested on emergency basis).
  - Continue research to assess effectiveness of current anthrax response strategy at reducing spore formation and soil contamination (no major cost).
  - Continue testing new methods of detecting carcasses during anthrax outbreaks (no major cost).
- Provide public education material on disease ($5,000).

	2009-2010	2010-2011	2011-2012	2012-2013
Enhanced disease monitoring program	$ 25,000 (new)	$ 25,000 (new)	$ 25,000 (new)	$ 0
Ongoing monitoring program (disease sampling from harvested bison)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)
Annual anthrax testing	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)	$ 25,000 (ongoing)
Provide public education materials	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)	$ 5,000 (ongoing)
Total	**$ 60,000**	**$ 60,000**	**$ 60,000**	**$ 60,000**

Timeline: Ongoing

Payback and Results

- Anthrax outbreaks and human risk are minimized.
- Disease-free status of Mackenzie and Nahanni populations is maintained.
- Public is informed on how to minimize health risks.

7. Engage partners to manage diseases.

- Continue efforts to prevent the spread of bovine tuberculosis and bovine brucellosis from bison in, and around, WBNP by maintaining the BCA as an effective bison-free zone ($100,000 cost shared with Parks Canada Agency).
- Establish a joint committee with Parks Canada, AB and NWT communities to develop a joint plan to address tuberculosis and brucellosis eradication ($150,000).
- Where farming or ranching occurs, identify measures to prevent wildlife from being infected with new diseases or parasites from livestock (no major cost).

	2009-2010	2010-2011	2011-2012	2012-2013
Maintain Bison Control Area	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)	$ 50,000 (new) $ 50,000 (Parks Canada)
Joint Plan	$ 50,000 (new) $ 100,000 (Partnership funds)	$ 50,000 (new) $ 100,000 (Partnership funds)	$ 50,000 (new) $ 100,000 (Partnership funds)	$ 50,000 (new) $ 100,000 (Partnership funds)
Total	**$ 250,000**	**$ 250,000**	**$ 250,000**	**$ 250,000**

Timeline: Winter 2012

Payback and Results

- Action plan developed to eliminate bovine tuberculosis and brucellosis.
- Cost to contain and monitor diseases will eventually be eliminated.
- People will have healthy bison to harvest in SRL.
- Cost of BCA program will no longer be necessary.
- Wood bison recovery will no longer be limited by disease.

8. Enhance habitat productivity.

- Where critical habitat is identified under the national recovery strategy, assess need for protection (no major cost).
- Conduct a preliminary study of cumulative effects on bison habitat ($10,000).
- Promote natural fire regime to maintain prairies (no major cost).
- Study water level changes on historic range ($5,000).
- Assess impact of new land use applications (e.g. agriculture, oil and gas operations) on bison habitat and bison health (no major cost).

	2009-2010	2010-2011
Cumulative effects study		$ 10,000 (new)
Study water levels on historic range	$ 5,000 (new)	
Total	**$ 5,000**	**$ 10,000**

Timeline: Winter 2012

Payback and Results

- Critical habitat is protected to ensure bison recovery.
- Impact of land use activity on bison recovery is minimized.

9. Support and expand wood bison recovery efforts in the NWT.

- Support completion and implementation of the national draft *Recovery Strategy for the Wood Bison in Canada* in cooperation with partners ($10,000).
- Identify critical habitat for all bison populations (no major cost).
- Assist Canada to undertake consultation on the draft national recovery strategy ($40,000).
- Work with communities and co-management boards to identify opportunities to support expansion of wood bison throughout historic range in the NWT ($5,000).

	2009-2010	2010-2011	2011-2012	2012-2013
Complete national recovery strategy	$ 5,000 (new) $ 5,000 (Environment Canada)	0	0	0
Consultations on national recovery strategy in the NWT	$ 20,000 (new) $ 20,000 (Environment Canada)	0	0	0
Consult on recovery activities in the NWT	0	0	$ 5,000 (new)	0
Total	**$ 50,000**	**0**	**$ 5,000**	**0**

Timeline: Begin Winter 2012

Payback and Results

- Wood bison are recovered and benefits to NWT residents are maximized.

RESOURCES

An investment of $1,815,000 is required to implement this strategy. Additional resources will be requested to implement management plans developed for each bison population.