

**Managing Disease Risk in Alberta's Wood Bison
with Special Focus on Bison to the West of
Wood Buffalo National Park**



**2010 and Winter 2010-2011
Progress Report**

June 2011

**Government
of Alberta ■**

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Introduction

Alberta has long recognized that the key issue regarding the management of wild bison is the threat of tuberculosis and brucellosis spreading from infected animals in and around Wood Buffalo National Park to livestock (cattle and domestic bison) and to healthy wild bison.

These introduced cattle diseases represent an ongoing threat to Alberta's livestock industry since they could result in trade restrictions and significant economic losses. In addition, wood bison are listed nationally as "threatened" and by Alberta as "endangered." It will be impossible to fully restore healthy, wild bison populations until these livestock diseases are eradicated, since recovery herds will need to be kept small and relatively confined to reduce their risk of becoming infected. There is also a risk of disease transmission to humans and to other wildlife species. In 1990, a federal Environment Assessment Panel recommended completely eradicating all bison from Wood Buffalo National Park (WBNP), followed by restocking with disease-free animals. This recommendation was not accepted by the federal government (Parks Canada).

Alberta's long-term goal is to eliminate the disease risk. This would remove the risk to Alberta's livestock industry and would allow the restoration of wild populations of wood bison across northern Canada. The restoration of wood bison populations would fill a key ecological role and provide substantial cultural and economic benefits to Alberta. Until this long-term goal can be achieved, the interim approach is to prevent the spread of tuberculosis and brucellosis from diseased wild bison to domestic livestock and disease-free wild bison.

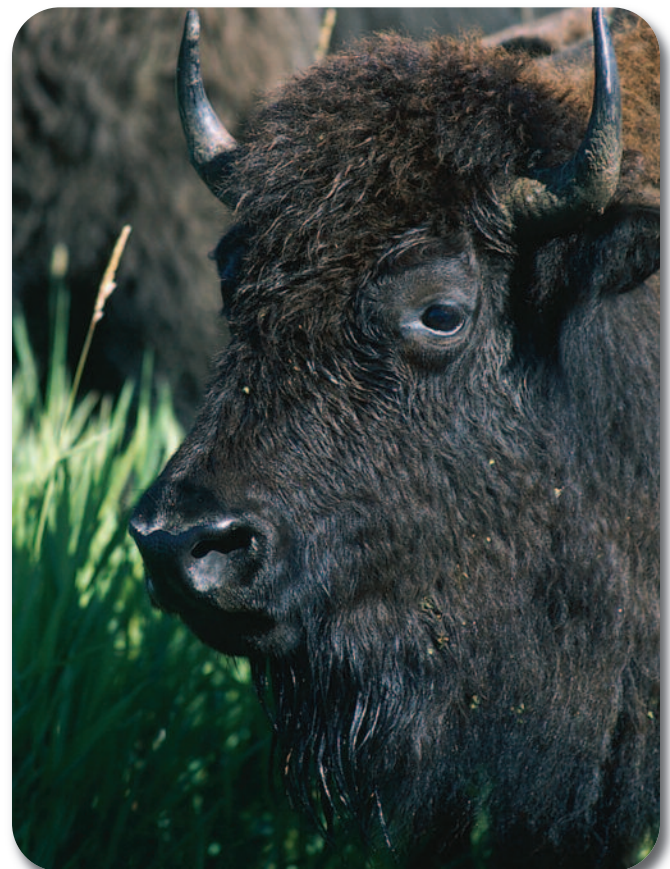
Alberta's approach for managing the disease risk to both domestic livestock and free-ranging wood bison is detailed in "Managing Disease Risk in Alberta's Wood Bison with Special Focus on Bison to the West of Wood Buffalo National Park." This

approach is focused on the area to the west of the park, as the Wentzel or Wabasca-Mikkwa bison pose a greater threat for transferring diseases to either domestic livestock or the wild Hay-Zama bison herd than does the Ronald Lake bison herd to the south of the park.

The approach has three broad components:

- Hay- Zama wild bison herd management;
- disease surveillance and risk reduction east of Highway 35; and
- monitoring populations of wild bison east of Highway 35.

The following is a progress report on that approach and includes work undertaken during 2010 and the winter of 2011 to March 31.



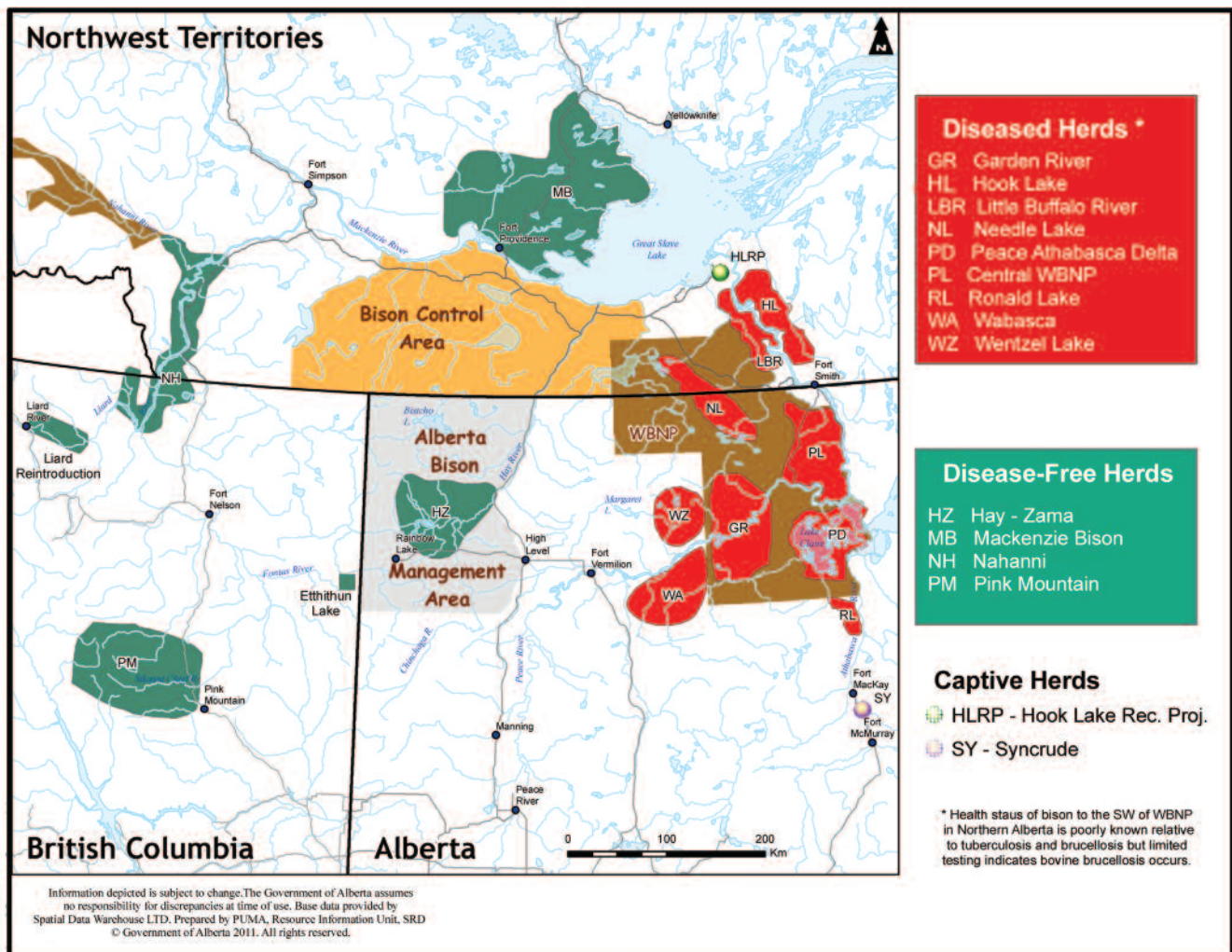
1.0 Hay-Zama Wild Bison Management

Objective - To maintain the wild Hay-Zama wood bison herd free of bovine tuberculosis and brucellosis by limiting their numbers and distribution, particularly east toward Highway 35, thereby reducing the opportunity for exposure to diseased bison from the vicinity of Wood Buffalo National Park (WBNP).

The Hay-Zama wood bison reintroduction program was started in 1983 to re-establish a healthy population of wood bison in northwestern Alberta. This was a significant element in the national wood bison management plan, which

called for at least one self-sustaining herd in each of Alberta, BC, Yukon, Northwest Territories and WBNP. The Hay-Zama bison herd has grown rapidly in numbers and distribution since 1994. A goal of the 2008 draft recovery strategy for wood bison in Canada was to protect “clean” recovery herds from contact with diseased animals. Hay-Zama bison are still considered to be disease-free, while bison populations in and around WBNP are known or assumed to be infected.

Figure 1. Bison Herds Currently Classified as Diseased or Disease-Free



The Hay-Zama bison herd has been monitored since the original release. The total number of bison peaked in the winter of 2008 when 652 animals were seen in 63 different groups. Observed range expansion raised concerns over bison moving east toward diseased bison from WBNP. In particular, there was specific concern over several instances of bison moving east along the Zama road to and beyond Highway 35. In the spring of 2008, it was determined that a highly regulated hunting season would be instituted and scheduled annually to stop the Hay-Zama herd from continuing to increase in numbers and distribution. The hunt serves two objectives relevant to this strategy:

- It contains the numbers and distribution of the Hay-Zama herd, which reduces the risk of them becoming infected. **If they become infected, there is a strong probability that the whole herd would have to be culled.**
- It allows for a significant amount of disease testing.

A significant communications and aboriginal consultation effort went into supporting this hunt. These efforts are ongoing, with regular communications going out to the public through a public advisory committee and annual public meetings in La Crete, High Level and other District Fish and Wildlife meetings in the Peace and Upper Hay Areas.

Prior to the hunt, there was limited information regarding disease status of the Hay-Zama bison. To the end of the 2010/11 season, 338 bison have been harvested during the three seasons and 242 samples have been collected for testing for brucellosis and tuberculosis (Table 1). **All samples submitted to date have been negative for both diseases.** During the recreational season in 2011, a number of samples were also obtained for testing for Johne's disease as a cooperative project with the University of Calgary. The results of testing were all negative for Johne's disease.

Table 1. Hay-Zama Bison Harvest and Samples from all Seasons

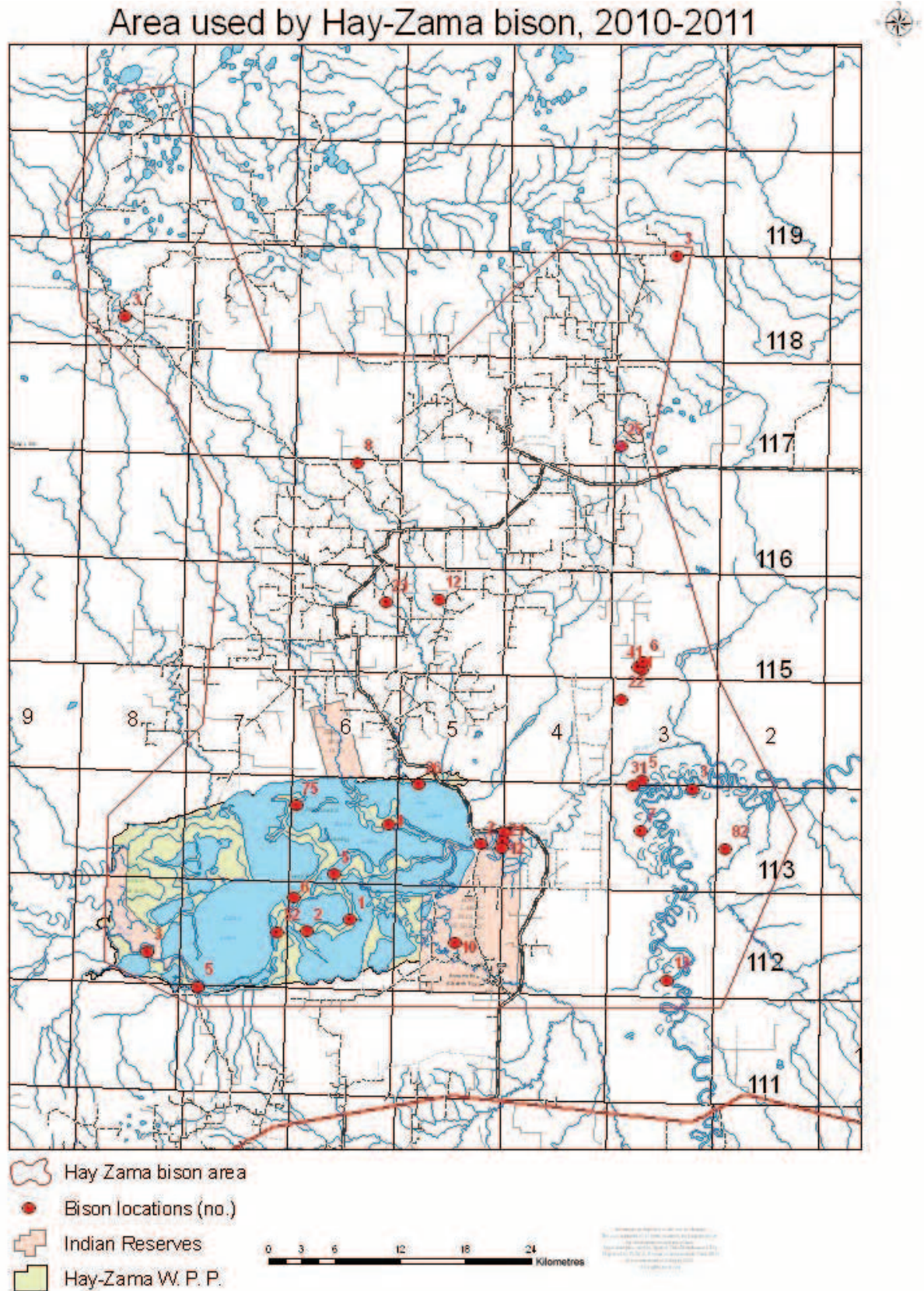
Season	Hunters	Harvest	Tested Samples
2008/09	Aboriginal	74	58
	Recreational	54	39
2009/10	Aboriginal	98	81
	Recreational	57	43
2010/11	Aboriginal	34	8
	Recreational	21	13
Total		338	242

Sustainable Resource Development continues to direct hunting effort toward bison moving along the eastern edge of the Hay-Zama range as well as bison that are posing human-bison conflicts along roads or in communities.

Hay-Zama Bison Population Status

A population survey was conducted from March 15 to 20, 2011 for the Hay-Zama herd. A total of 561 bison in 31 groups were found. The survey confirms the current Hay-Zama bison range has not grown and the population remains within the target of 400 to 600 bison (Figure 2). The previously expanding bison range for the Hay-Zama herd has decreased from 5,500 km² to 3,500 km².

Figure 2. Hay-Zama 2011 Bison Survey Herd Locations



2.0 East of Highway 35 Disease Surveillance and Risk Reduction

The probability of bison moving west from the Wentzel herd or from the populations in the Wabasca-Mikkwa area is high. Gates *et al.* (2001) identified several routes that bison would likely use to move west. As well, bison from the Hay-Zama herd would most likely move east along these same routes. Most of the favourable travel routes pass through the agriculture zones in and around Ft. Vermilion and La Crete, and therefore pose the greatest threat to domestic livestock.

2.1 Detection Approach

Objective - To detect any wild bison on private agriculture lands near Ft. Vermilion and La Crete and the Agricultural Area and Highway 35 Surveillance Zones.

Surveillance areas have been identified along Highway 35 and around the Agricultural Area Zone. The Highway 35 Surveillance Zone stretches 10 km on both sides of Highway 35 from the High Level airport north to the Alberta – N.W.T. boundary (Figure 3). The Agricultural Area Zone contains farmland along Highway 58 from High Level to Fort Vermilion and farmland in the La Crete – Fort Vermilion area (Figure 4). Ongoing reconnaissance flights will also explore associated areas that are potential movement corridors. The purpose of the Highway 35 surveillance zone is to detect animals that: (i) may be moving from the east (high risk of infection) toward the Hay-Zama herd, or (ii) Hay-Zama animals (low risk of infection) moving from the west toward the high risk area. The purpose of the Agricultural Area Surveillance Zone is to detect bison (presumed infected) that may be moving from known population areas in WBNP, Wabasca-Mikkwa and Wentzel Lake areas.

Figure 3. Highway 35 Surveillance Zone

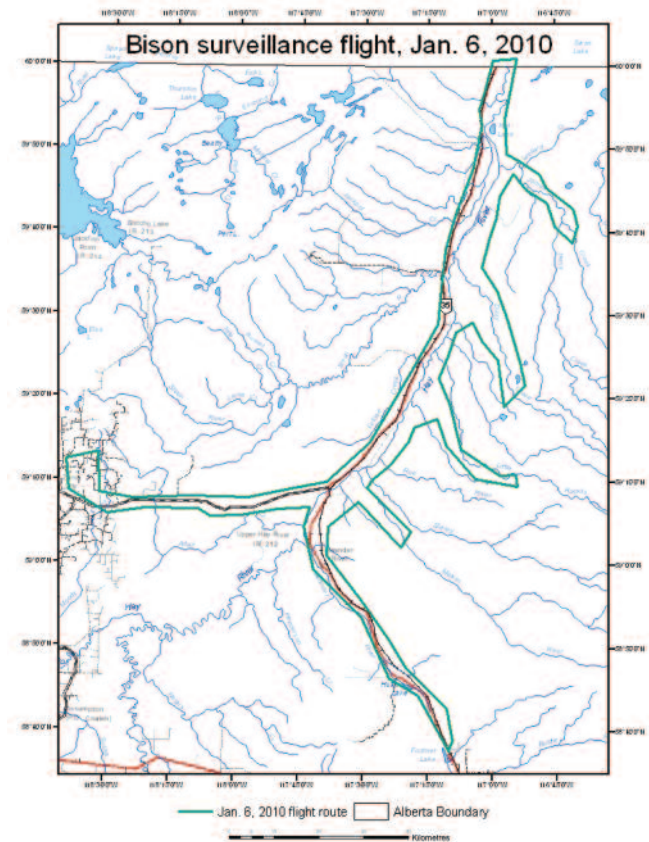
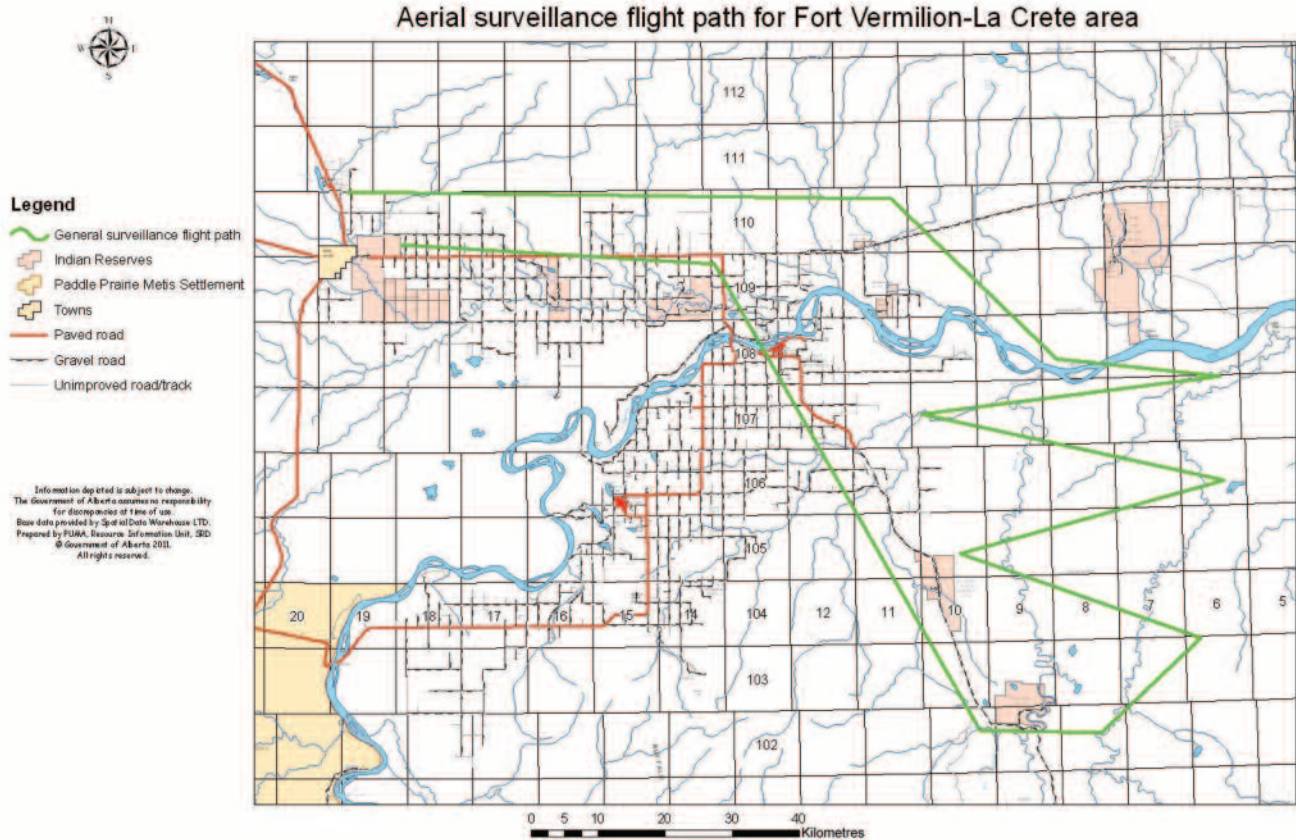


Figure 4. Agricultural Area Surveillance Zone

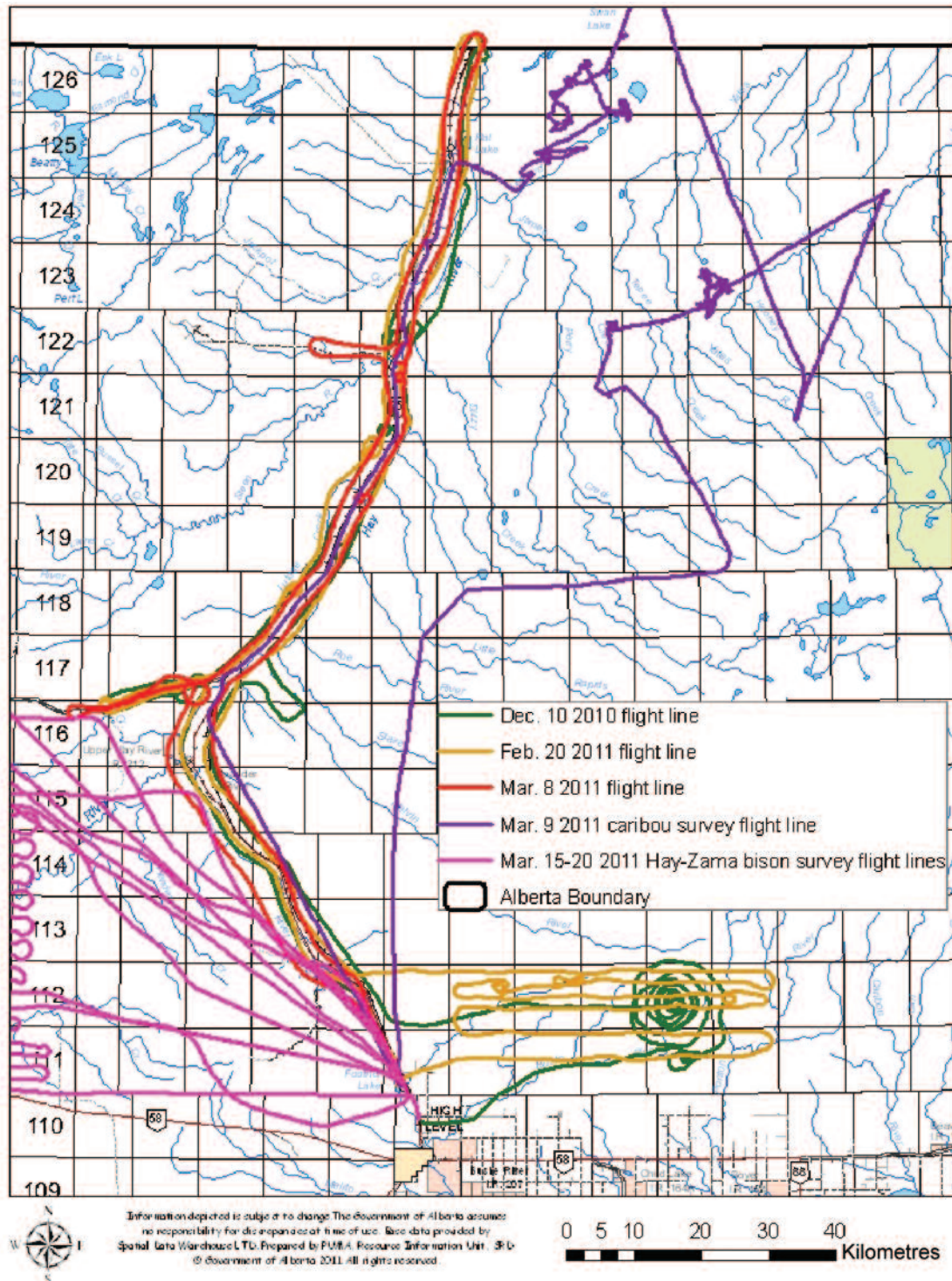


2.1.1 Update on Aerial Surveillance Flights

Highway 35 Surveillance Zone

From January 6, 2010, to March 20, 2011, four surveillance flights were flown in the Highway 35 surveillance zone by Sustainable Resource Development staff. No bison or bison sign were detected during these flights (Figure 5).

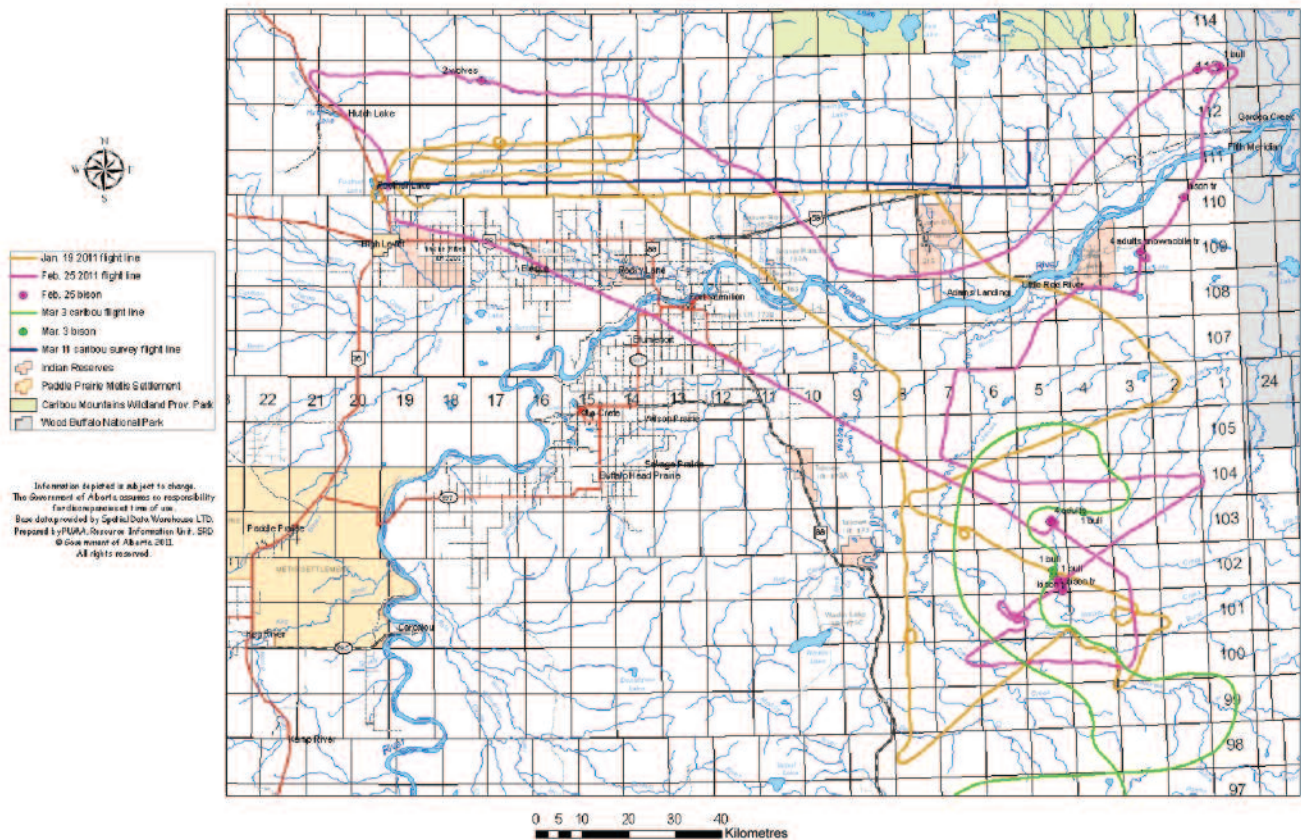
Figure 5. Highway 35 Surveillance Flights



Agricultural Area Surveillance Zone

From January 7, 2010 to February 25, 2011, three surveillance flights (Figure 6) were flown in the Agricultural Area Surveillance Zone. No bison or bison sign was detected within the Agricultural Area Surveillance Zone.

Figure 6. Agricultural Area Surveillance Flights



Additional Flights

Sustainable Resource Development staff utilized additional opportunities to search for bison. These flights were no cost to the AARD/SRD Managing Disease Risk in Alberta's Wood Bison program and were value-added to work being conducted by the Wildlife Management Branch. Where possible the search for bison and bison sign was undertaken to augment surveillance flights, determine the closest proximity of bison to surveillance zones and assess travel corridors suspected to be used by bison from WBNP.

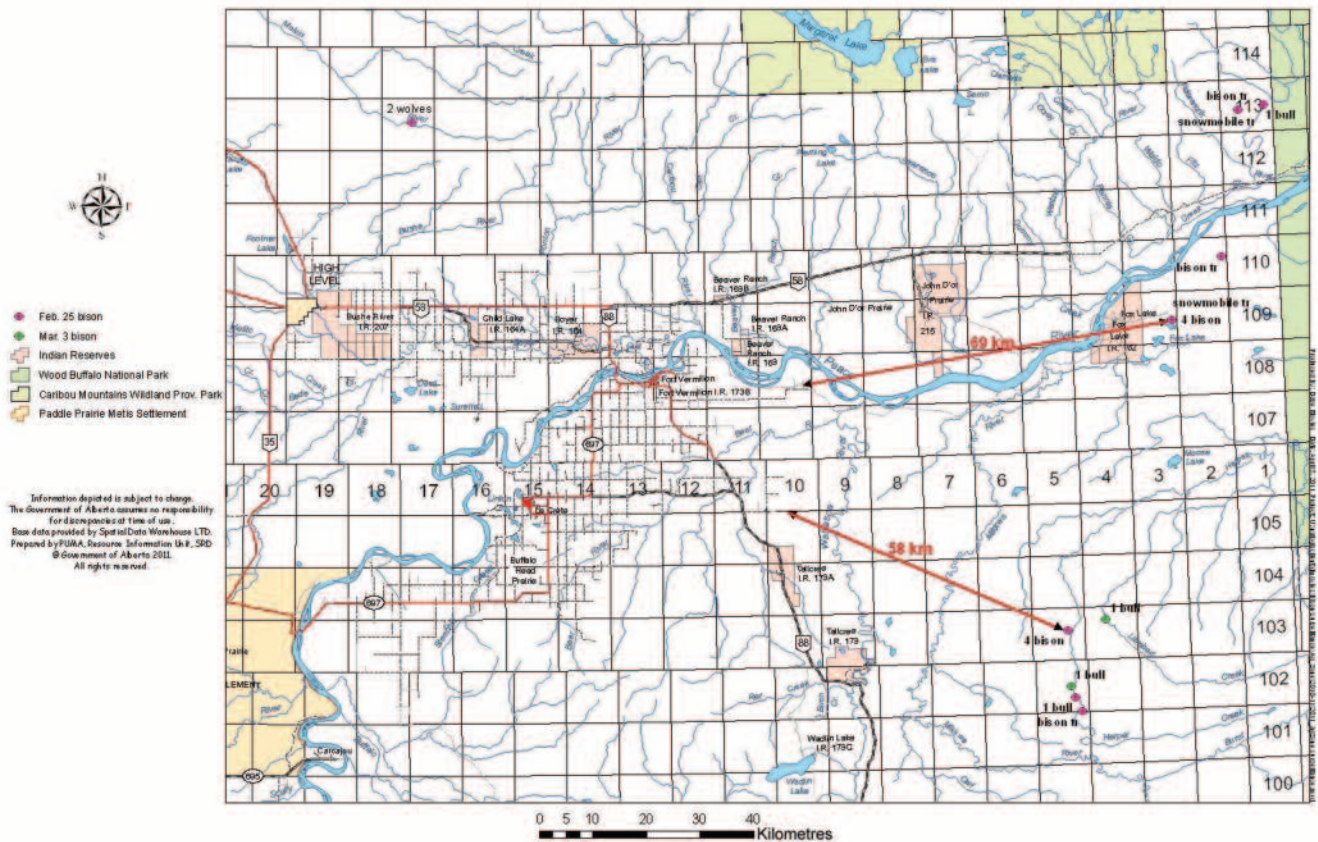
Nearest Bison to Highway 35 Surveillance

A total of 11 additional flights were flown in and around the Highway 35 surveillance zone (Figure 5) by Sustainable Resource Development staff while working on caribou surveys (March 9, 2011) and Hay-Zama bison population surveys (March 15-20, 2011). The closest bison were approximately 45 kilometres from the Hwy 35 surveillance zone and were located in Township 117 and Range 3, approximately 5.5 kilometres north of the Zama Road on March 19, 2011, during the Hay-Zama bison survey.

Nearest Bison to the Agricultural Area Surveillance Zone

Two additional surveillance flights were flown in and around the Agricultural Area Surveillance Zone. On March 3 and 11, Sustainable Resource Development staff were flying caribou surveys and searched for bison. The bison closest to agricultural land were 58 km and 69 km away, respectively. Bison locations are presented in Figure 7.

Figure 7. Additional Flights Agricultural Area Surveillance Zone



2.1.1.2. Public Reporting

Objective - To encourage client groups associated with government, as well as encourage the general public, to report wood bison sightings in the surveillance zones.

Public communication/consultation has continued with respect to part of this initiative. Posters were put up in local businesses such as gas stations. Annual Fish and Wildlife District public meetings in High Level and La Crete were used to encourage stakeholders and the public to report sightings of bison within a 10 km strip along

either side of Highway 35. Aircraft companies were provided information regarding the need to report bison sightings as they constitute a valuable opportunity to provide bison information.

Each holder of a Registered Fur Management Area Licence was sent a personal letter and “Bison Sighting Cards.” The cards were prepared to provide a pocket-ready note pad to record locations and numbers of bison while these trappers were working.

The Hay-Zama (Upper Hay) Bison Public Advisory Committee has been made aware of the need to report wood bison sightings.

Sustainable Resource Development staff working within the Peace and Upper Hay Areas Forestry and Lands Divisions were provided information and asked to report any bison sightings.

The Government of Alberta (AARD/SRD), "Managing Disease Risk in Alberta's Wood Bison with Special Focus on Bison to the West of Wood Buffalo National Park" report and reference to more detailed information was sent to First Nation, Métis, agricultural, local municipal, hunting and outfitting stakeholders in March 2011.

Advertisements for public reporting of bison sightings has been prepared and scheduled for local newspapers. These advertisements are planned for the 2011/12 budget year. Additional use of posters and public contacts will be utilized to ask the public to report bison sightings east of Highway 35.

2.2 Response Plan

Objective - To remove all wild bison detected on private agricultural lands near Ft. Vermilion and La Crete and in any of the Agricultural and Highway 35 Surveillance Zones. Wherever possible, meat should be salvaged and tissue samples for disease detection should be collected.

2.2.1 Response efforts will involve active removal by shooting and killing of any bison detected through surveillance activities. Tissue sampling and disease testing will be an integral component of these efforts.

2.2.2 Sustainable Resource Development staff from High Level and Ft. Vermilion Districts will action bison reports. Reports outside normal office hours will be investigated through 1-800-642-3200 RAP line. Government will engage aboriginals, hunters, outfitters, landowners, etc. to facilitate removal and salvage of meat where feasible and to ensure blood and tissue samples are collected and tested. Remote access by helicopter may be required in some instances.

On the morning August 16, 2010, a member of the public advised that bison were seen east of Highway 35 at the Zama Road junction. That same afternoon a thorough helicopter search of the area was conducted by Fish and Wildlife staff and no bison were located. The following day a ground search was conducted by Fish and Wildlife staff and no tracks or bison were located. Subsequent follow-up determined the information provided by the individual was false.

In December a helicopter pilot reported what was believed to be bison sign seen in October approximately 30 km east of High Level and 15 km north of Highway 58. Additional flight lines were flown in this area during both Highway 35 and Agricultural Area Surveillance Zone flights. No bison or bison tracks were found north of Highway 58 east of High Level and west of the Ponton River (Figures 5 and 6).

3.0 Population monitoring plan east of Highway 35

The number of bison east of Highway 35, their movements and distribution over time is unknown and remains a significant factor in our assessment of disease risk. To our knowledge, most bison reside in two herds, referred to as the Wentzel and Wabasca-Mikkwa herds. This program proposes initiating a survey to estimate the entire bison population in Alberta outside WBNP, then surveying every three years to assess population changes over time. As noted earlier with respect to the Hay-Zama population, herd size is an important risk factor. In addition, a program confirming the disease status of these herds will be needed before establishing long term goals and strategies for them. Currently, bison east of Highway 35 are offered no conservation protection with the exception of bison found within Caribou Mountains Wildland Provincial Park.

3.1 Population Estimate and Distribution

Objective - To determine with some precision the numbers and distribution of wild bison in northern Alberta in areas surrounding Wood Buffalo National Park.

3.1.1 Aerial Survey

The area outside of WBNP has been divided into three areas to facilitate and prioritize bison surveys (Figure 8). It is proposed to survey all areas over a three-year period in order of priority, and then conduct monitoring surveys of each herd on a three-year cycle to evaluate size and distribution changes over time.

There are no confirmed sightings of bison in Area 1, and it is assumed there is no resident population of bison in Area 1. A survey for Area 1 is planned for the winter of 2011/12.

Area 2 encompasses the area where the Wabasca-Mikkwa bison herd resides and was surveyed for bison in 2010. A total of 24 bison

were located. Evidence of bison kills by hunters and hunting pressure was also evident and recorded.

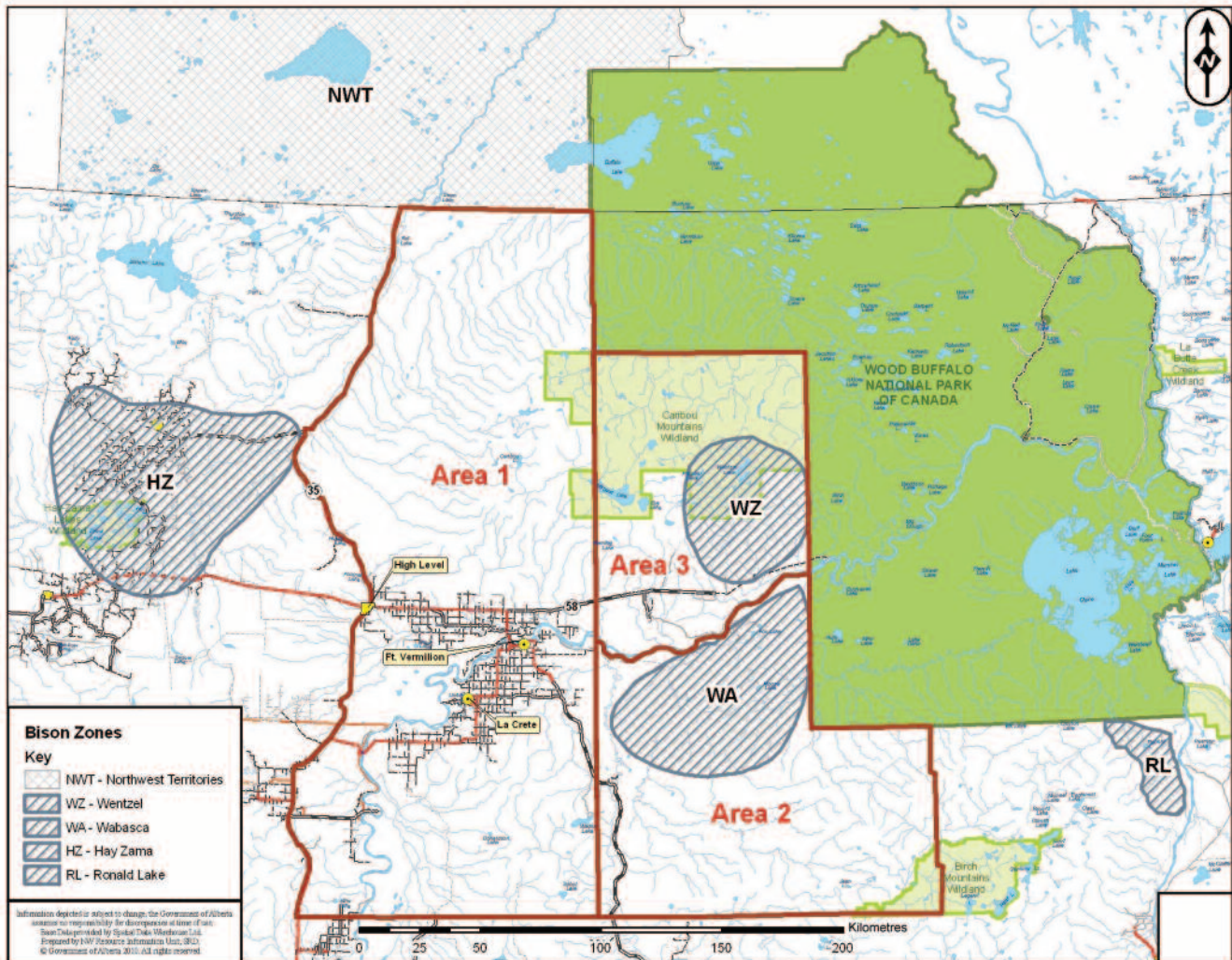
Area 3 was surveyed January 25 to 29, 2011. A total of 200 bison were located. Roughly half of the bison found were located within the Caribou Mountains Wildland Provincial Park and were associated with the Wentzel and Buffalo River drainages. The remaining bison were found along the boundary and west of WBNP in Townships 112 and 113 Range 1 West of 5th Meridian.

3.1.2 Public Reporting

Encourage the public, bison hunters, trappers and outfitters, First Nation bands and aboriginal harvesters to report bison sightings and local knowledge regarding preferred habitat use and seasonal movements in each of the three areas.

As with public reporting in the surveillance zones, posters and information have been provided to the public. Each holder of a Registered Fur Management Area Licence was sent a letter and "Bison Sighting Cards."

Figure 8. Aerial Survey Areas for Bison Population Estimates



3.2 Disease Status of Bison Outside of Wood Buffalo National Park

Objective - To determine the disease status of bison in northern Alberta to the west and southeast of Wood Buffalo National Park.

Data on the prevalence of brucellosis and tuberculosis in the outlier herds (Wentzel and Wabasca-Mikkwa) is incomplete and inconclusive. There is no data concerning rates of infection in the Ronald Lake herd to the southeast of WBNP, which is reported to be growing and ranging farther south. However, outlier herds are assumed to be associated with bison from the park, which

are known to harbour these diseases. Bison east of Highway 35 are assumed diseased and are classified as non-wildlife under The *Wildlife Act*. As a result, they are not protected and can be hunted year-round except in the Caribou Mountains Wildland Provincial Park. Alberta Health and Wellness issued a public advisory for the area in 1992, urging anyone handling, processing and consuming potentially diseased bison to take precautions. Regardless of status, the proximity to the parent WBNP disease reservoir puts all outlier herds at a high risk of infection.

To ultimately assess the risk of disease transmission to livestock and disease-free wild bison and to plan surveillance and containment programs in the future, efforts will be made to determine the disease status for each outlier herd. The Government of Alberta (GOA) will undertake disease sampling. However, if the opportunity presents itself through the ongoing harvest of bison by hunters in the area, the GOA will test bison samples collected voluntarily. The GOA will not actively seek these sampling opportunities. However, if people disclose that they are harvesting bison and are willing to collect the required samples the GOA will use this opportunity to gather disease information. Hunters will be supplied with a limited number of sampling kits and be provided with information on the two diseases suspected to be in the bison so that the risks can be assessed and the proper precautions can be taken.

3.2.1 Disease Sampling

The proposed disease sampling is a phased approach, with each progressive phase increasing in cost, statistical precision and sample size. Bison will be salvaged opportunistically where interested individuals and ground access is available. The disease-testing program for a given herd will be terminated as soon as one of the two diseases (bovine tuberculosis or brucellosis) is detected. The herd will be ranked as diseased. The disease sampling is based on the following assumptions:

- that outlier herds have similar prevalence of bovine tuberculosis or brucellosis to that occurring in WBNP (40 to 50 per cent);
- that it may take small sample sizes to detect disease presence if it is at high prevalence; and
- that detection of either disease is enough evidence to classify a bison herd as diseased.

Phase One

Phase one will use Government or contract collection of two to four animals from each herd for each year of the program, or until the presence of disease is detected. All collection efforts will focus on sampling older bulls wherever possible. With potentially high prevalence, we may be able to establish disease status in one or two years. This phase will run no more than three years.

If there are no diseased bison detected in phase one, Government will evaluate the option of implementing higher precision sampling phases.

Note: Genetic material will be archived for each bison sample to support any investigations into the origin of these populations.

Disease-sampling kits for hunters have been made available to local Fish and Wildlife offices and to Martin Braat, local Alberta Beef Producers representative in the Ft. Vermilion area. In March an outfitter was provided disease-sampling kits. Three separate blood samples and one lung sample were submitted to the High Level Fish and Wildlife office by this outfitter successfully hunting bison in Area 3. The samples are being tested and at the time of reporting no results are known.

Literature cited

Gates, C. C., J. Mitchell, J. Wierzchowski and L. Giles. 2001. A landscape evaluation of bison movements and distribution in northern Canada. AXYS Environmental Consulting Ltd. 115 pp.

References

To find more information on bison disease management, visit:

<http://srd.alberta.ca/FishWildlife/WildlifeDiseases/WoodBisonDiseaseManagement.aspx>