

**BISON CONTROL AREA PROGRAM  
ANNUAL REPORT OF SURVEY ACTIVITIES  
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## ***ABSTRACT***

Bison in Wood Buffalo National Park and the Slave River Lowlands are infected with bovine tuberculosis and brucellosis while both the Nahanni and Mackenzie bison populations are free of these livestock diseases. To help protect the disease-free status of these two populations, the Government of the Northwest Territories implemented the Bison Control Area (BCA) program in 1987 with the objective of reducing probability of disease transmission between herds by preventing bison from moving through or establishing herds within the area south of the Mackenzie River between the Trout and Buffalo Rivers. In order to keep this area free of bison, aerial surveys are flown to search for bison, and public participation by reporting any sightings or signs of bison is encouraged.

This program continued through the 2009/10 season with nine weekly shoreline patrols, a semi-comprehensive survey and a comprehensive survey. In total, 53.1 hours were spent flying these surveys in a Cessna 337 over 15 days. Throughout the season, radio announcements and newspaper advertisements helped to communicate the purpose of the BCA and why public reports of bison are important to the program.

There were no bison or any signs of bison observed within the BCA during the 2009/10 season, nor were there any reports of bison submitted by the public.

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## ***INTRODUCTION***

The wood bison's (*Bison bison athabasca*) original range included the boreal forests of Alaska, Yukon, southern Northwest Territories, northeastern British Columbia, northern Alberta, and northwestern Saskatchewan. Although wood bison never occurred in the large populations that plains bison (*Bison bison*) did, they both met the same fate during the 19<sup>th</sup> century: near extinction due to over-hunting. In 1894, there were as few as 250 wood bison remaining (Soper 1941).

Wood bison were protected by the *Buffalo Protection Act* of 1877 with enforcement by the Northwest Mounted Police beginning about 20 years later. Their numbers had rebounded to approximately 1500 by 1922 (Graham 1923) when Wood Buffalo National Park (WBNP) was established to help protect them. From 1925-1928, the federal government moved plains bison from Buffalo National Park in Wainwright, Alberta, to Wood Buffalo National Park. How many of the 6673 bison that were shipped survived the long train and barge ride from Wainwright is still debated; some say it may have been as low as only half (e.g. Carbyn *et al.* 1993). These bison were infected with bovine tuberculosis and brucellosis from domestic livestock and subsequently spread these diseases to bison throughout the greater Wood Buffalo National Park area (Fuller 2002). By 1934, wood bison numbers had increased to between 10 000 and 12 000 (Soper 1941).

Bovine tuberculosis and brucellosis continue to be a hindrance to fully re-establishing wood bison populations in northern Alberta and southeastern NWT. These diseases not only threaten healthy free-ranging bison but also healthy commercial herds of both bison and cattle (Animal, Plant and Food Risk Assessment Network 1998).

Bovine tuberculosis and brucellosis are bovine diseases that originated from domestic livestock, but they will also infect other species, including humans. Bovine tuberculosis is caused by the bacterium *Mycobacterium bovis*; it is a chronic disease that causes yellow to tan nodules (tubercles) most often found in the chest cavity and lungs. Lymph nodes in the head and neck may also be swollen or necrotic. It is a progressive disease that leads to debilitation and emaciation. Brucellosis is caused by the bacterium *Brucella abortus* and causes abortions, swollen joints and swollen testicles.

Bovine tuberculosis and brucellosis were both discovered in Wood Buffalo National Park in the 1950s (Corner and Connell 1958; Fuller 1959). In 1990, researchers examined the remains of 72 bison that had died as a result of hunting, predation, disease or natural accidents. Brucellosis was identified in 18 (25%) and tuberculosis in 15 (21%), resulting in a combined prevalence of 42% (Tessaro *et al.* 1990). The most recent study on prevalence rates of these diseases in the greater Wood Buffalo National Park area found 49.0% of live-captured bison were positive reactors for tuberculosis and 30.9% were positive reactors for brucellosis (Joly and Messier 2004).

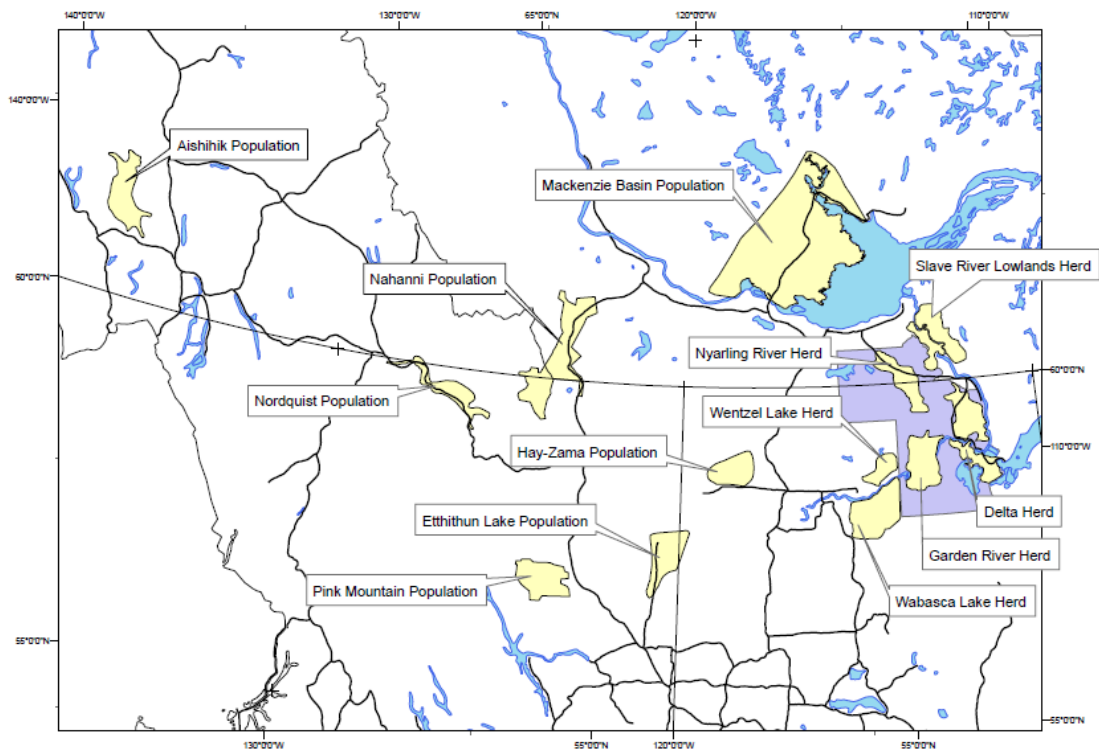
In 1963, 18 wood bison were released near Fort Providence in order to establish a disease-free population north of the Mackenzie River. These 18 bison were part of a previously undiscovered herd that was found in 1957 near the Nyarling River in Wood Buffalo National Park (Tessaro *et al.* 1993). The Mackenzie bison population has since grown to be the largest, healthy, free-roaming bison population in Canada (Figure 1). The most recent survey in 2008 estimated this population to consist of 1,555 animals ( $\pm 315$ , 95% C.I.) (Terry Armstrong, unpublished data).

The successful re-establishment of the Mackenzie bison population encouraged an attempt to re-establish another free ranging wood bison population in the Northwest Territories. In 1980, 28 wood bison were moved from Elk Island National Park to Nahanni Butte (Figure 1). In 1989, an additional 12 bison were released and then in 1998, 61 more animals were released into this population north of Fort Liard. By 2004, the Nahanni bison population had increased to 400 animals (Larter and Allaire 2007). This population is being monitored and is considered to be healthy and free of bovine tuberculosis and brucellosis.

Since APFRAN's (1998) risk analysis, potential paths for bison movements between the diseased and healthy populations have been investigated (Gates and Wierzchowski 2003). This study found that if bison were to pass from the greater WBNP area to the Mackenzie bison range or vice versa they would most likely move along or near the southern shoreline of Great Slave Lake near the Mackenzie River, or north of Buffalo Lake. Cooperation from all



interested groups, including local, territorial and national governments as well as non-government entities and the public is needed for the BCA program to be successful because the distance between the northwest corner of WBNP and the southeast corner of the Mackenzie Bison Sanctuary is within feasible bison dispersal range (Gates *et al.* 2001).



**Figure 1.** The current distribution of bison (*Bison bison*) in northern Canada. All populations are wood bison except Pink Mountain, which is plains bison.

***Bison Control Area Program***

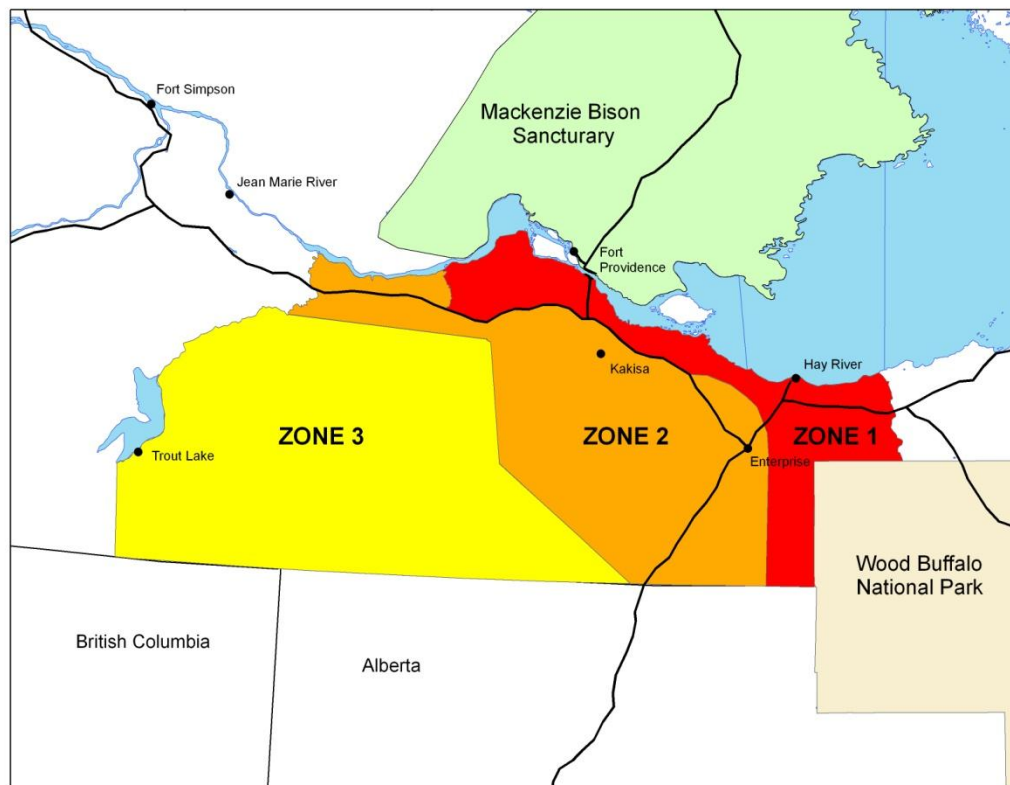
The Bison Control Area (BCA) was established in 1987 to reduce the risk of bovine tuberculosis and brucellosis infected bison in the Slave River Lowlands and Wood Buffalo National Park coming in contact with disease-free bison in the Mackenzie, Nahanni and Hay-Zama (Alberta) populations. The BCA is intended to be a buffer zone between infected and uninfected populations where bison are prevented from becoming established. This zone encompasses over 3,936km<sup>2</sup> bounded in the south by the NWT border, in the north by the Mackenzie River and Great Slave Lake, in the west by the Trout River and in the east by the Buffalo River. All bison found within the BCA are assumed to be diseased and are removed and tested.

Since 1993 the bison control program has been jointly funded by Government of the Northwest Territories (Environment & Natural Resources) and the Government of Canada (Parks Canada Agency). Both governments realize the importance of maintaining healthy wood bison herds and promoting the growth of the species.

The objectives of the BCA program are to prevent bison from moving between the Slave River Lowlands/Wood Buffalo National Park and the Mackenzie, Nahanni and Hay-Zama populations by detecting and removing any bison that may come into the area. To achieve this we:

- Conduct aerial surveillance of the BCA during the winter months

- Maintain the BCA free of bison and prevent any herds from establishing within its limits
- Increase public awareness about the program
- Confirm disease status of any bison found in the BCA



**Figure 2.** The Bison Control Area is stratified into three zones.

## **METHODS**

We adopted survey methodology used in previous years (Gates *et al.* 1992; Williamson *et al.* 1995; Bohnet & Gates 1997; Nishi 2002; Boulanger *et al.* 2002; Bidwell *et al.* 2004; Campbell *et al.* 2004; Hartop *et al.* 2009) to assure repeatability and comparability of wildlife sightings.

The Bison Control Area (BCA) is stratified into three zones (Figure 2). Zone I is the area in which bison are most likely to be seen, since it is the section of the BCA that is nearest to both the Mackenzie Bison Sanctuary and Wood Buffalo National Park. Therefore, the program focuses on this particular zone, with more frequent aerial surveillance in the form of weekly shoreline patrols. Zone II is a larger zone and is only surveyed twice a year during the semi-comprehensive and comprehensive surveys. Surveillance of Zone III relies on reports from people living and travelling in the area instead of aerial surveys.

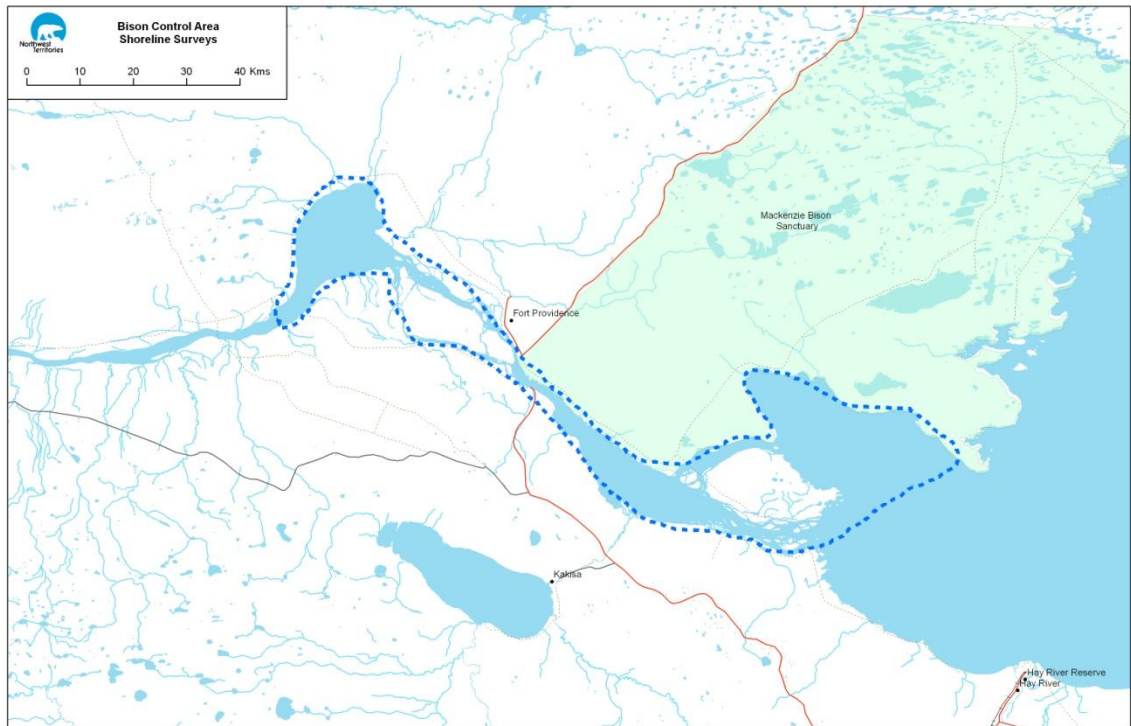
Aerial surveillance is conducted during the winter months when bison and signs of their presence (feeding craters and tracks) are most visible. Also, the probability of bison moving through the BCA is the greatest in the winter because bison are more likely to walk across the frozen Mackenzie River than swim across it in the summer.

For the 2009/10 surveillance season all of the aerial surveys were flown using a Cessna 337, from Landa Aviation. Community representatives from Fort Providence and Hay River were hired as observers on survey flights. Each shoreline patrol was conducted by the pilot and one observer. Employees from

the ENR office in Fort Smith conducted both the semi-comprehensive and comprehensive surveys with help from two community observers. During all surveys the aircraft flew 150m to 250m above ground level and at speeds of 180 to 220 km/h.

Shoreline patrols occurred throughout the period when river crossings were possible, with an interval of around seven days. These patrols were flown along the Mackenzie River's shores between Pointe Desmarais and Axe Point and took approximately three hours to complete (Figure 3). Patrols ended when reduced snow cover made bison and their tracks difficult to see, and ice conditions on the Mackenzie River deteriorated to the point where crossing by bison became less likely than in mid-winter.

While on shoreline patrols, observers recorded current weather conditions and sightings of any large animals or their tracks. The position of each sighting was recorded using the onboard GPS and plotted on a 1:250 000 scale topographic map. Both data sheets and field maps were faxed to the wildlife technician at the ENR office in Fort Smith, who mapped the data in both OziExplorer® and ArcMap®.



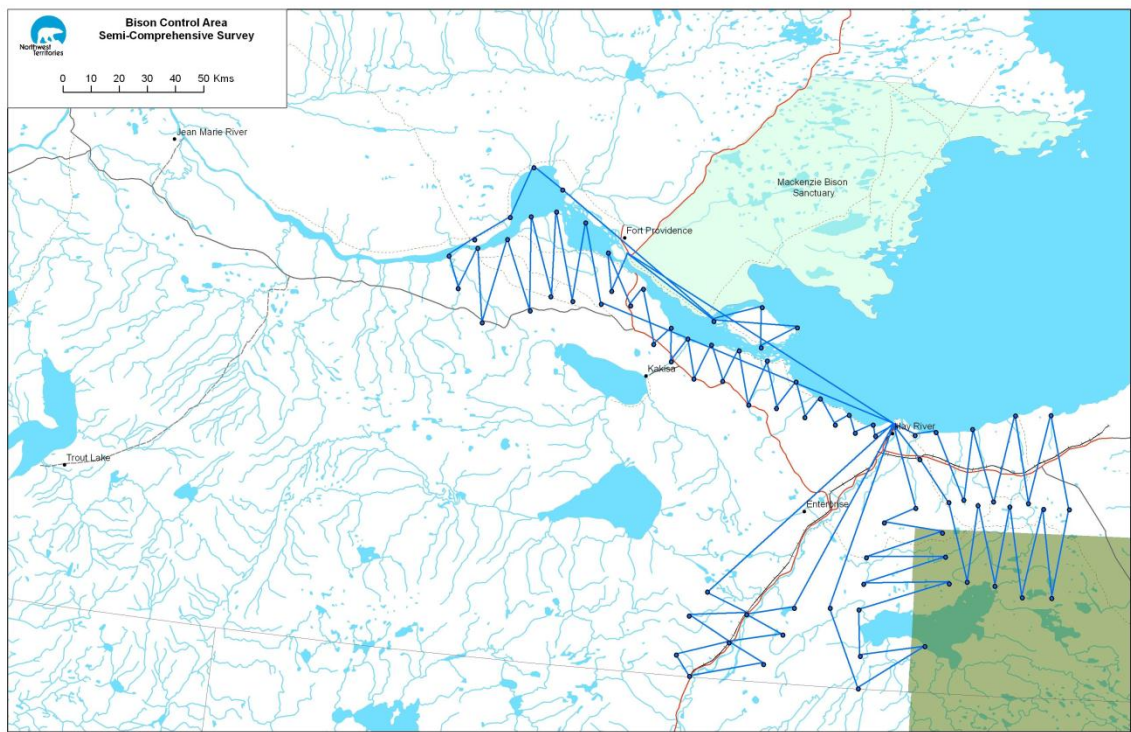
**Figure 3.** The approximate route followed for the weekly shoreline patrols.

A semi-comprehensive survey covering Zones I and II was flown in February 2010 (Figure 4) and a comprehensive survey was flown in March 2010, also covering Zones I and II but at a higher intensity (Figure 5). The flight routes used for the semi-comprehensive and comprehensive surveys in the 2008/2009 season were adapted for use in the 2009/10 season. Only part of the comprehensive survey routes were completed so a modified shoreline patrol (Figure 6) was flown later in March to cover the rest of the area required by the comprehensive survey.

The semi-comprehensive and comprehensive surveys were transect surveys. To ensure transect width was adhered to, sticks cross-hatched with electrical tape were mounted to the aircraft prior to the flights. These sticks were

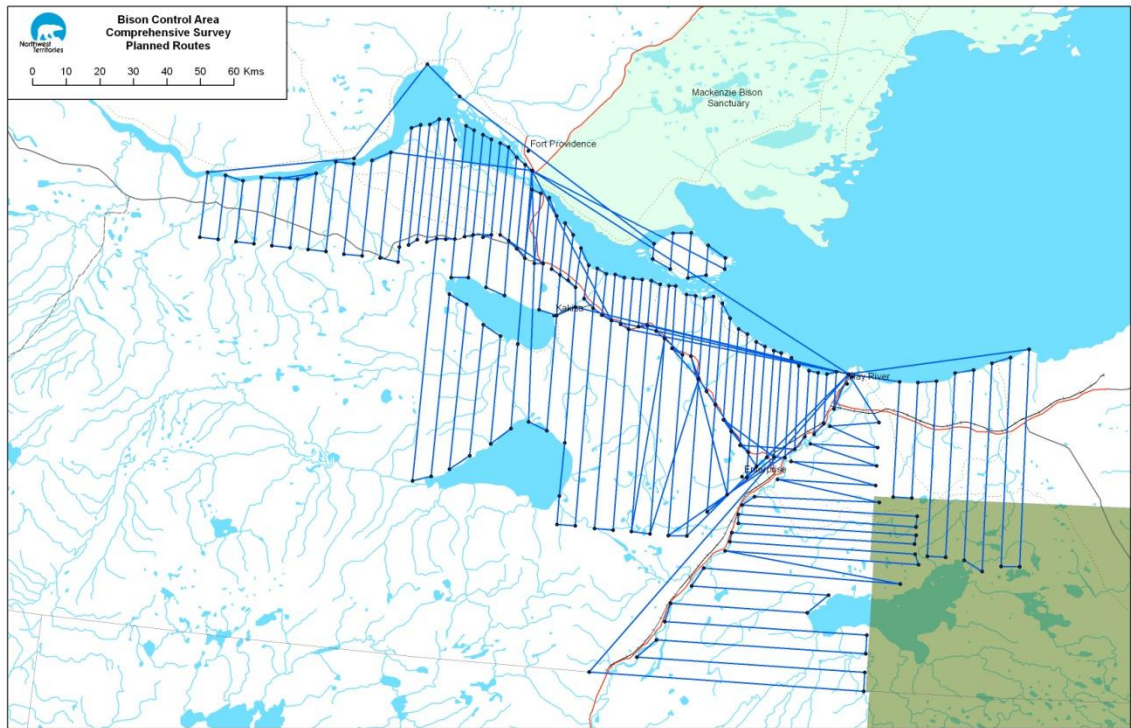
mounted based on the formula,  $w = (W/H)h$ , where  $w$  is the distance on the ground, from the side of the aircraft that should be marked,  $W$  is the transect width (500 m),  $H$  is the survey height above ground (150-200 m) and  $h$  is the height from the ground to the observers' eye level when seated in the aircraft on the ground. Once the sticks were in place a test flight was done over a known 500 meter length to ensure proper placement. Using a fixed transect width allowed for accurate calculations of percent coverage.

During both the semi-comprehensive and comprehensive surveys, the program ArcPad® by ESRI was used on a Panasonic® Toughbook (Model CF-19) with a Garmin hand-held GPS to record all animals or tracks seen. Every night, the day's sightings and flight path were saved to another file on the computer hard drive as well as backed up onto a USB memory stick.

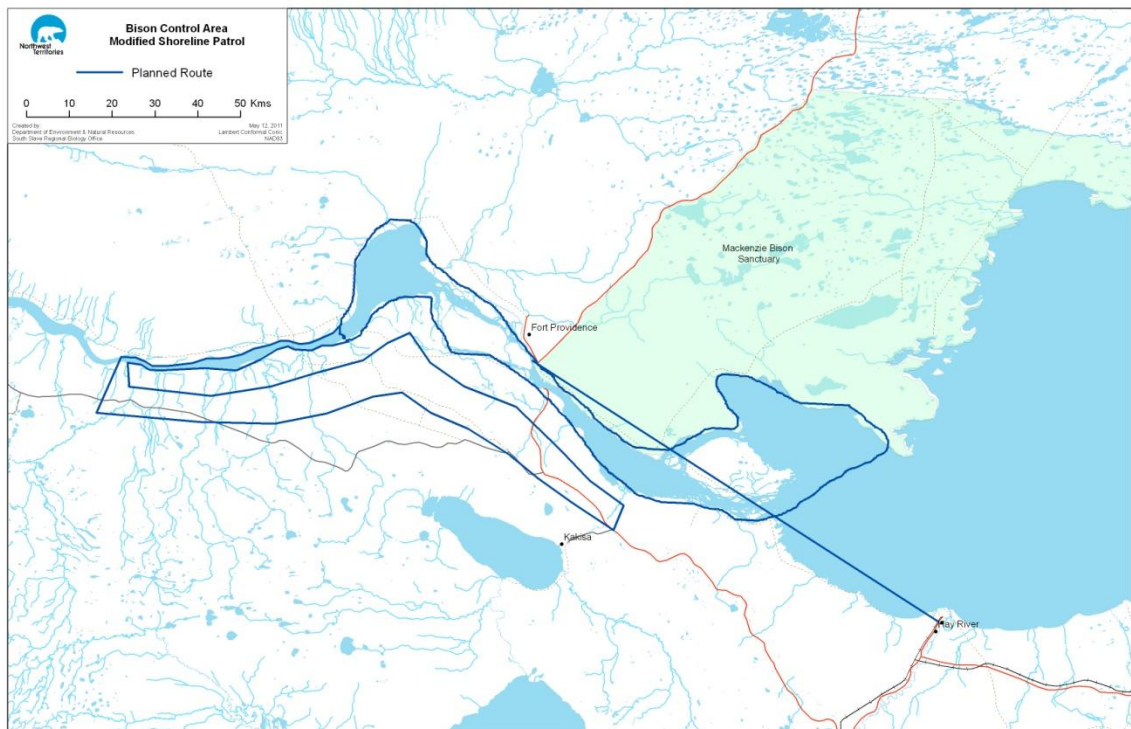


**Figure 4.** Routes followed during the semi-comprehensive survey.





**Figure 5.** Routes followed during the comprehensive survey.



**Figure 6.** Route followed during modified shoreline patrol on March 23, 2010.



## ***RESULTS***

Although bison have been observed in the BCA in the past (Appendix A), there were no bison observed or any bison sightings reported during the 2009/10 season. Nor were there any signs of bison (tracks, craters, etc.) crossing the Mackenzie River during any of the surveillance flights. All 2768 bison observations and their tracks observed during the surveys were spotted north of the Mackenzie River, outside of the BCA.

Eleven aerial surveys were completed in 53.1 hours on 15 days of flying (Tables 1 and 2). Weather conditions were recorded for each survey flight (Appendix B). Snow cover, weather and light conditions for detecting bison and their sign from the air were good to excellent for most surveys except for a few days when low intensity, flat light conditions were encountered.

### ***Shoreline Patrols***

During all of the shoreline patrols a total of 2310 bison, 50 moose and 37 wolves were observed (Table 1 and Figure 7). The weekly shoreline patrols began on December 23, 2009 and finished on April 14, 2010. Shoreline patrols were not always completed at regular intervals, due to weather and Landa Aviation's schedule. Total flight time for the nine shoreline patrols was 27.3 hours with a mean duration of 3.0 hours (Table 2).

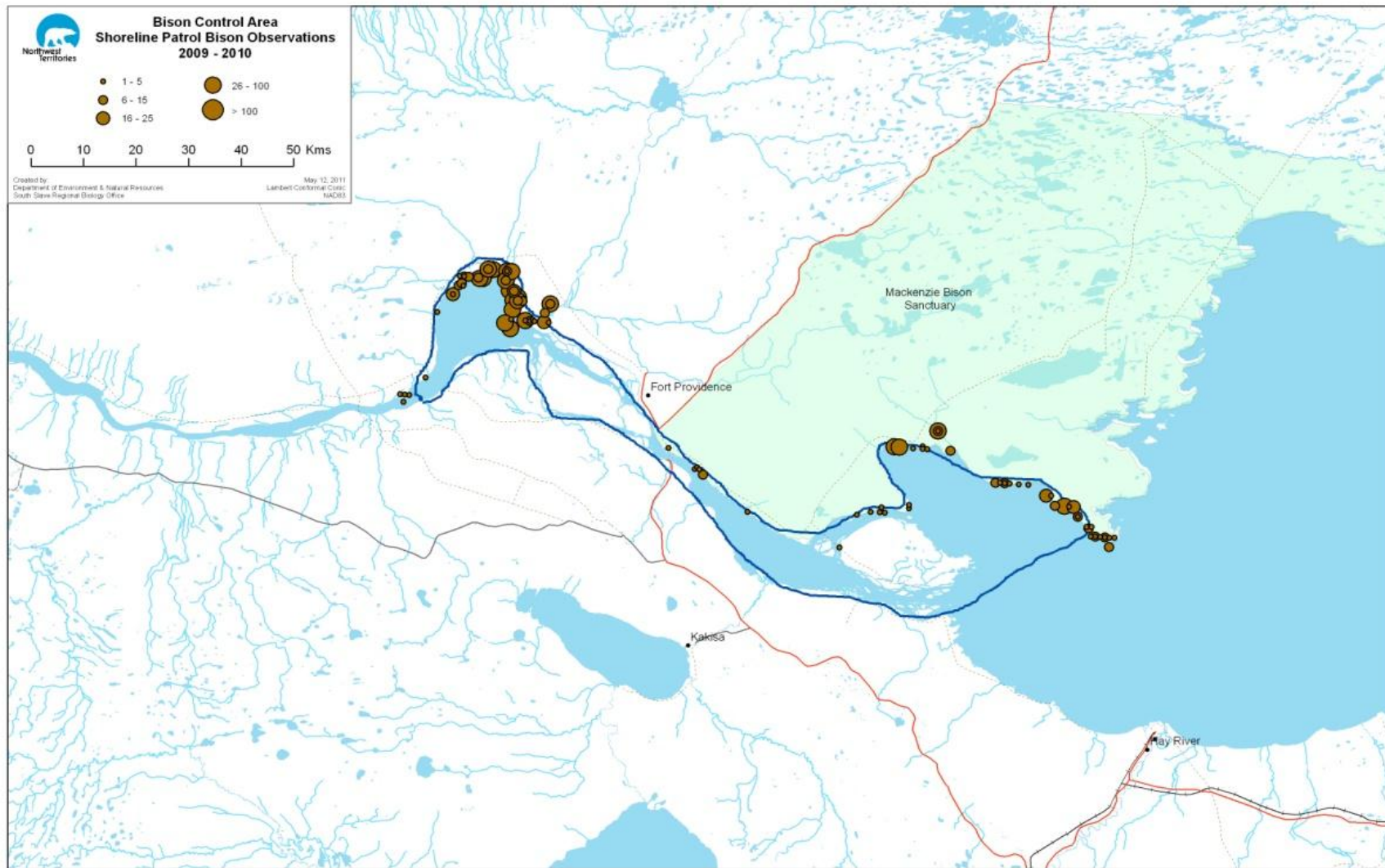
**Table 1.** All recorded observations of animals seen during the shoreline patrols.

<b>Shoreline Patrols</b>	<b>Bison</b>	<b>Moose</b>	<b>Wolf</b>	<b>Wolf Kill Site</b>
23-Dec	192	5	0	1
7-Jan	383	2	18	1 (bison)
18-Jan	359	10	8	0
27-Jan	290	21	8	1 (moose)
22-Feb	359	8	2	0
5-Mar	286	4	1	2
23-Mar	228	0	0	0
7-Apr	97	0	0	0
14-Apr	116	0	0	1 (bison)
<b>TOTAL</b>	<b>2310</b>	<b>50</b>	<b>37</b>	<b>6</b>

**Table 2.** Summary of BCA Shoreline Patrols for the 2009/10 season.

<b>Survey</b>	<b>Date</b>	<b>Hours Flown</b>	<b>Survey</b>	<b>Date</b>	<b>Hours Flown</b>
<b>1</b>	23 Dec 2009	1.9 (2.7)	<b>6</b>	5 Mar 2010	2.1 (3.2)
<b>2</b>	7 Jan 2010	1.8 (2.8)	<b>7</b>	23 Mar 2010	2.2 (3.1)
<b>3</b>	18 Jan 2010	1.9 (3.1)	<b>8</b>	7 Apr 2010	1.8 (2.7)
<b>4</b>	27 Jan 2010	2.0 (3.3)	<b>9</b>	14 Apr 2010	2.0 (3.2)
<b>5</b>	22 Feb 2010	2.1 (3.2)	<b>Total Hours = 17.8 (27.3)</b>		

\*Time in brackets includes ferry time from Hay River to Fort Providence and back to Hay River



**Figure 7.** All recorded observations of bison during the shoreline patrols from December 23, 2009 to April 14, 2010.

The final shoreline patrol of the 2009/10 season was flown on April 14, 2010. As April progressed, increasing pockets of open water were reported on the Mackenzie River during the shoreline patrols. On April 21, 2010, Tyler King of Landa Aviation reported that the ice was getting quite soft and Hay River reached a high temperature of 28°C so the ice was melting quickly. Based on these observations, it was decided that the shoreline patrols would be stopped because it would be unlikely for any bison to cross the Mackenzie River with ice break-up imminent.

### ***Transect Surveys***

A total of 457 bison, 31 moose, 21 boreal caribou and 9 wolves were observed during the semi-comprehensive survey (Table 3). The semi-comprehensive survey was flown February 9 – 12, 2010 with no flights on February 10 due to poor weather (Figure 4). This survey took 12.5 hours to complete (Table 4) and flew over 1317 nautical miles of transect lines, with an estimated 6.0% coverage of the BCA. Locations of bison and bison tracks observed during the semi-comprehensive survey are summarized in Figure 8.

**Table 3.** All recorded observations of animals and tracks seen during the semi-comprehensive survey, February 9-12, 2010.

<b>Semi-Comprehensive Survey</b>	<b>9-Feb</b>	<b>11-Feb</b>	<b>12-Feb</b>	<b>TOTAL</b>
Bison	0	1	457+1*	457+1
Bison Tracks	2	1	0	3
Moose	12	5	14	31
Moose Tracks	47	14	11	72
Boreal Caribou	0	21	0	21
Boreal Caribou Tracks	134	173	20	327
Wolf	0	0	9	9
Wolf Tracks	23	26	22	71
Wolverine Tracks	0	1	0	1
Lynx Tracks	7	3	2	12
Fox Tracks	0	2	2	4
Otter Track	1	0	0	1
Unknown Track	4	0	0	4

\* Wolf kill

**Table 4.** Summary of BCA Transect Surveys for the 2009/10 season.

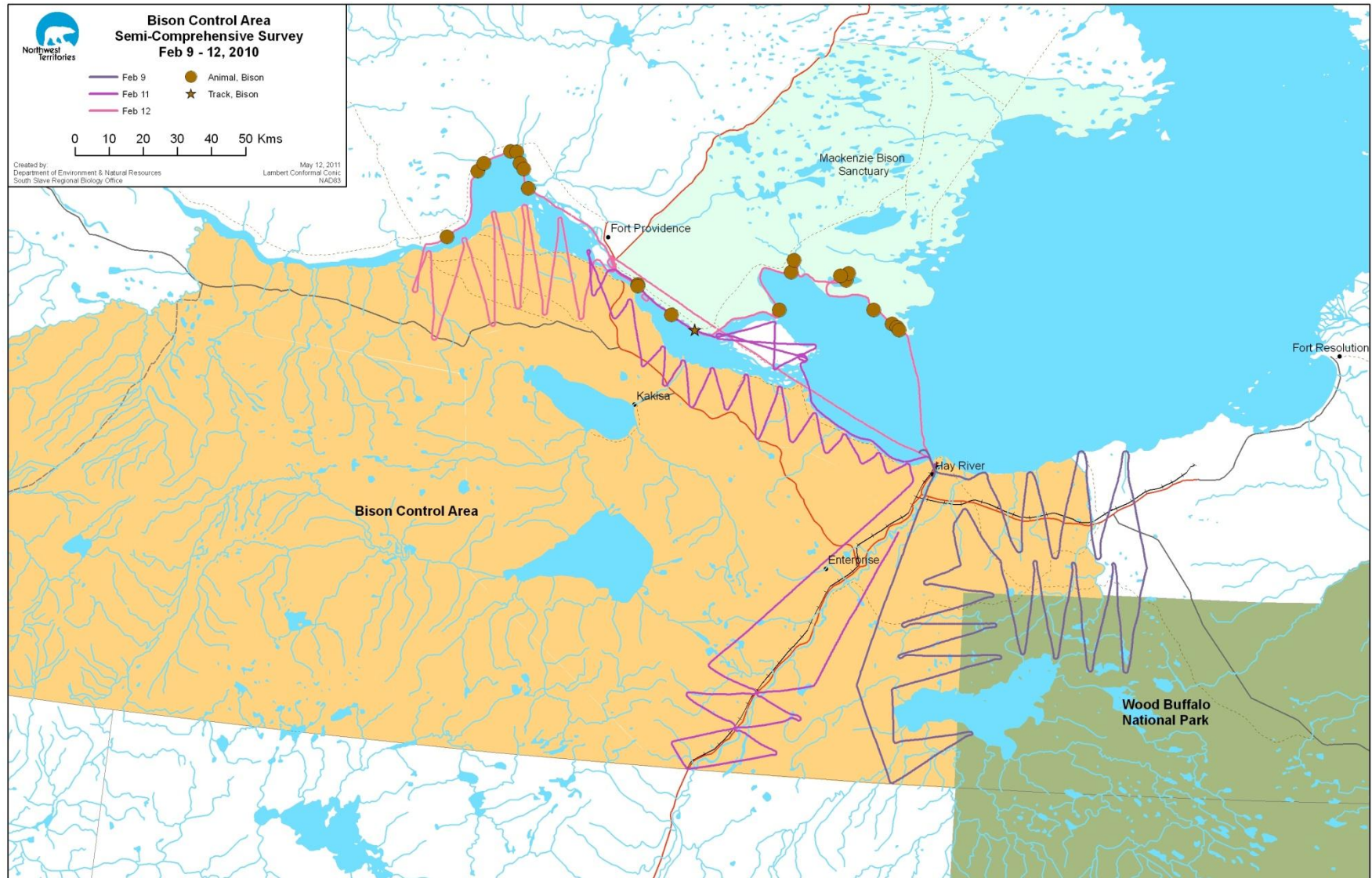
<b>Survey</b>	<b>Date</b>	<b>Hours Flown</b>
<b>Semi-</b>	9 Feb 2010	4.5
<b>Semi-</b>	10 Feb 2010	0.0
<b>Semi-</b>	11 Feb 2010	4.2
<b>Semi-</b>	12 Feb 2010	3.8
<b>Semi-</b>	<b>TOTAL</b>	<b>12.5</b>
<b>Comprehensive</b>	8 Mar 2010	6.2
<b>Comprehensive</b>	9 Mar 2010	2.7
<b>Comprehensive</b>	10 Mar 2010	4.4
<b>Comprehensive</b>	<b>TOTAL</b>	<b>13.3</b>

The comprehensive survey was flown between March 8 and 10, 2010 (Figure 5) and the modified shoreline patrol was flown on March 23, 2010 (Figure

6). This survey had 13.3 hours of flight time (Table 3) plus 3.1 hours for the modified shoreline patrol. Over 1468 nautical miles of transect lines were flown, with an estimated 6.9% coverage of the BCA. During the comprehensive survey no bison were observed but six moose and four caribou were detected (Table 5). Routes completed during the comprehensive are shown in Figure 9.

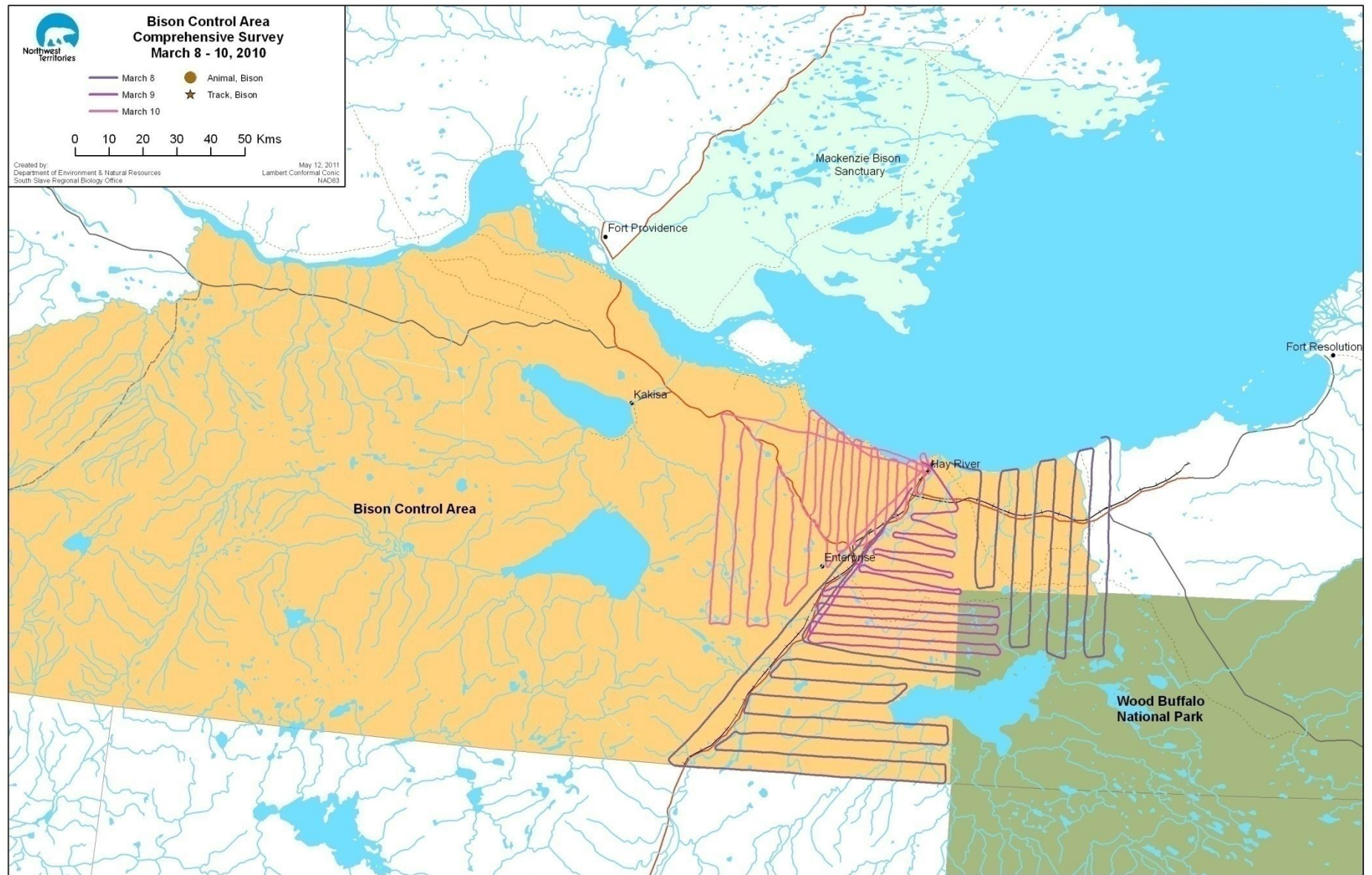
**Table 5.** All recorded observations of animals and tracks seen during the comprehensive survey, March 8-10, 2010.

<b>Comprehensive Survey</b>	<b>8-Mar</b>	<b>9-Mar</b>	<b>10-Mar</b>	<b>TOTAL</b>
Bison	0	0	0	0
Bison Tracks	0	0	0	0
Moose	3	1	2	6
Moose Tracks	36	48	38	122
Boreal Caribou	4	0	0	4
Boreal Caribou Tracks	103	4	88	195
Wolf	0	0	0	0
Wolf Tracks	3	0	0	3
Other Tracks	3	0	1	4



**Figure 8.** All bison and bison track observations recorded during the semi-comprehensive survey, February 9-12, 2010.





**Figure 9.** Routes completed during the comprehensive survey, March 8-10, 2010. No bison or their tracks were observed during the survey.



***Public Awareness***

This year, the attempts at increasing public awareness included radio and newspaper advertisements. In addition to these campaigns, letters explaining the BCA were sent to all communities and interest groups.

Newspaper advertisements were placed in The Hub, Hay River's local newspaper and the NWT News/North, a NWT wide newspaper (Appendix C). These advertisements are meant to remind people of where the BCA is and who to call if they see a bison in this area. They are run in September, to target people at times when they are most likely to see bison, while travelling or hunting.

A radio announcement was aired on CJCD and CKLB to inform the public about the BCA and alert anyone travelling through the BCA to report bison sightings to the nearest ENR office (Appendix D). CJCD and CKLB aired 30 second long announcements three times a day every Thursday and Friday from September 3, 2009 to October 30, 2009. CKLB also aired the announcement three times a day on May 14-15, June 18-19 and July 30-31. These advertisements were also placed to reach people at times when they would be more likely to be travelling through the BCA and may see bison.

## ***DISCUSSION***

There were no observations of bison or signs of bison in the BCA during the 2009/10 season, nor were there any reports of bison or their signs from the public. While there was no evidence that bison were present within the BCA, we cannot conclude definitively that there are none in the control area due to the size of the BCA and the long period each year when the surveillance program is inactive. Despite this uncertainty, inherent to the BCA program, it would be beneficial to continue the program to ensure to the extent we can, that this area remains bison-free and the Mackenzie and Nahanni bison populations remain free of bovine tuberculosis and brucellosis.

The comprehensive survey was cut short because the navigator became ill so a modified shoreline patrol was flown about two weeks later to cover some of the area that was not covered originally. The modified shoreline patrol was shorter than what had been planned because the aircraft did not have enough fuel to fly the entire route. Due to these events the area covered during the comprehensive survey was not as extensive as previous years. Not all surveys were run under optimal conditions; however, using weather forecasts and advice from Landa Aviation's pilots, flights were done on the best possible days.

Survey lines for the semi-comprehensive and comprehensive studies were extended into the northwest corner of Wood Buffalo National Park (Figures 4 and 5) as they were in the 2007/08 and 2008/09 seasons. Aerial surveillance in coming years should continue to include this area since bison do inhabit the

northwest corner of WBNP and there is suitable habitat for bison in the Hay River area and near the NWT/Alberta border.

The public awareness campaign for the 2009/10 season involved newspaper and radio advertisements as well as information letters being sent to communities in and around the BCA. Raising public awareness is a very important component of the BCA program because active surveillance takes place only during the winter months. For the remainder of the year, reports from members of the public are the only means of detecting bison within the control area.

## ***ACKNOWLEDGEMENTS***

Several people were integral to the smooth running of the BCA program for the 2009/10 season. Bart Hartop and Heather Sayine-Crawford from the Department of Environment and Natural Resources office in Fort Smith handled all the administrative aspects, including staffing, finance and pay records. Renewable Resource Officers Evelyn Krutko and Edward Landry and Community Support Clerk Carol Bonnetrouge helped arrange for community observers. Thank you to the South Slave GIS Technician, Dallas Phillips, who performed the comprehensive survey.

The community observers were indispensable and we thank all of them for assisting on our surveillance flights: Robert Sambele of Fort Providence, and John Mandeville and Lyle Froehlich of Hay River. Many thanks also go to Landa Aviation Ltd. and their pilots Darcy King and Tyler King for their expertise and input as well as help that went beyond the requirements of their job. We also give our gratitude to Ella Stinson for her help with all of the public advertisements.

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## APPENDIX A

### ***Summary of surveillance activities and removals of bison from the Northwest Territories Bison Control Area (1988/89 – 2008/09)***

Year	No. of Shoreline Patrols (hours)	No. of Semi-Comprehensive Surveys (hours)	No. of Comprehensive Surveys (hours)	Total Hours	No. of Snow-mobile Ground Patrols	Bison Removals
1988 / 89	1					
1989 / 90	2					
1990 / 91	2					
1991 / 92		7				
1992 / 93			3			9 <sup>1</sup>
1993 / 94	14 <sup>2</sup>		1		23	
1994 / 95	10 (26) <sup>3</sup>	6 (94)	1 (34)	153	33	2 <sup>4</sup>
1995 / 96	11 (35)	3 (48)	1 (41)	123		3 <sup>5</sup>
1996 / 97	21 (62)	3 (45)	1 (46)	153		
1997 / 98	14 (43)	3 (46)	1 (48)	137		
1998 / 99	14 (43)	2 (30)	1 (45)	117		
1999 / 00	14 (42)	2 (28)	1 (46)	115		
2000 / 01	13 (40)	2 (30)	1 (50)	120		
2001 / 02	14 (42)	2 (29)	1 (42)	113		
2002 / 03	11 (25)	2 (22)	1 (40)	87		
2003 / 04	13 (31)	1 (11)	1 (37)	78		
2004 / 05	12 (29)	1 (14)	1 (33)	76		
2005 / 06	11 (23)	1 (14)	1 (36)	88		
2006 / 07	12 (38)	1 (19)	1 (36)	93		
2007 / 08	13 (40)	1 (15)	1 (33)	88		
2008 / 09	11 (33)	1 (15)	1 (30)	78		
2009 / 10	9 (27)	1 (13)	1 (13)	53		

<sup>1</sup> 17 May 1992: 7 bulls and 1 bull shot near Point de Roche

31 May 1992: 1 bull shot near Point de Roche (no lymph nodes collected)

Serological testing for *Brucella* was negative for all 9 bulls, no lesions consistent with tuberculosis observed on gross pathology or histopathology

<sup>2</sup> Four patrols covered the Hay River area and extended inland to the northwest boundary

<sup>3</sup> Numbers in brackets represent survey hours (rounded off to the nearest hour)

<sup>4</sup> 13 October 1994, prior to the surveillance season beginning, 1 bison shot by hunter near the eastern boundary of the BCA. Blood and tissue samples collected but no evidence of brucellosis or tuberculosis.

8 March 1995, 1 cow shot by hunter along south shore of Mackenzie River. Wolves had likely wounded the cow. Blood serum and retropharyngeal nodes collected.

<sup>5</sup> 19 March 1996: 3 cows killed by hunter on the south shore of Mackenzie River. Blood serum (n=2) and retropharyngeal lymph nodes (n=3) collected. No serological reactors *Brucella*, and lymphatic tissue normal on gross examination.

## **APPENDIX B**

### ***Weather conditions during the BCA program, Season 2009-2010***

Table B.1. Weather data during the shoreline patrols.

<b>Date</b>	<b>Patrol</b>	<b>Temp</b>	<b>Winds</b>	<b>Sky</b>	<b>Light</b>	<b>Intensity</b>	<b>Snow</b>
Dec 23	1	-17°C	Calm	Clear	Bright	High	Complete
Jan 7	2	-20°C	Calm	Clear	Bright	High	Complete
Jan 18	3	-22°C	5 knots - NW	Clear	Bright	High	Complete
Jan 27	4	-21°C	Calm	Clear	Bright	High	Complete
Feb 22	5	-18°C	SE	Scattered	Bright		Complete
Mar 5	6	2.9°C	Calm	Scattered	Flat	High	Complete
Mar 23	7		10-15 knots - NW	Clear	Bright	High	Complete
Apr 7	8	9°C	5 knots - SE	Scattered	Bright	High	Complete
Apr 14	9	7°C	2 knots - S	Clear	Bright	High	Complete

Table B.2. Weather data during the semi-comprehensive and comprehensive surveys.

<b>Date</b>	<b>Survey</b>	<b>Temp</b>	<b>Winds</b>	<b>Sky</b>	<b>Light</b>	<b>Intensity</b>	<b>Snow Cover</b>
Feb 9	Semi	-10°C	Calm	Clear	Bright	High	Complete
Feb 11	Semi	-17°C	Calm	Broken	Bright		Complete
Feb 12	Semi	-13°C	5 knots - 100°	Clear	Bright	High	Complete
Mar 8	Comp	-1.4°C	10 knots - 220°	Partially Cloudy			Complete
Mar 9	Comp	-7.6°C	24 kph - 180°	Clear	Bright	High	Complete
Mar 10	Comp	-5.0°C	15 knots - 140°	Clear	Bright	High	Complete



## APPENDIX C

*Quarter page black and white advertisement that is run in the Hay River Hub and the NWT News/North.*



## ***APPENDIX D***

### ***CJCD and CKLB Radio Advertisement Script***

Bison populations in Wood Buffalo National Park and the adjacent Slave River Lowlands are infected with disease and must be removed for testing.

A buffer zone lies south of the Mackenzie River to the Alberta border, between Trout River and Buffalo River, to prevent contact with diseased bison.

Motorists and hunters are requested to report any sightings of bison in the buffer zone to the nearest Environment and Natural Resources office, or by calling 1-866-629-6438.

NWT residents play an important part in the bison control program. Thank you for your participation.

**APPENDIX E*****2009-2010 BCA Expenses***

Travel and Accommodation	\$2,274.20
Wages (observers)	\$6,619.09
Contract Services (Including Advertising)	\$6,368.94
Aircraft Charters	\$40,169.90
BCA Technician (In kind support)	\$31,050.00
<b>Total</b>	<b>\$86,482.13</b>

The comprehensive survey being cut short helped reduce expenses this season. A BCA technician was not hired for the 2009-2010 season because an intern biologist, employed in the Fort Smith ENR office, helped with BCA activities.